

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 KHD 7,5 a

Edition 10.69

En

PE 6 A 90 C 410 LS 2184  
+ Intermediate version 2178

RQ 250/1300 AB 575 DL\*  
RQV 250-1300 AB 612 DL\*  
EP/RSV ... B 254 DL

supersedes 3.67  
company K H D  
engine F 6 L 312  
(135 PS)\*  
150 PS \*\*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 \pm 0,1$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,4	0,3			
	6	2,3 - 3,1	(0,6)			
	15	14,2 - 15,5				
200	9	3,8 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

RQ 250/1300 AB 575 DL

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	15,7-16,3	550	16	1300	14,0-14,4	500	0	100	6,2-8,1	750	15,8-16,0
				1320	9,8-14,0			200	4,8-6,8	900	15,1-15,4
				1350	0 - 9,5			300	2,0-4,5		
				1410	0			400	0	1100	14,0-14,3

Torque-control travel  
on flyweight assembly dimension a =  $0,65$  mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a	③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7
1380	74,5-76,5**		1000	67,5-70,5**		
			600	66,5-70,5**		
1280	69,0-71,0*	700	1000	63,0-66,0*		
			700	64,0-67,0		

Checking values in brackets

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**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				rev/min	Control rod travel mm		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
EP/RSV ca.61	300-1250	A8 B254	DL			ca.22	300	6,0	1230	0
	1250	16,0					100	19 - 21		
	1300	11,4					300	5,7-6,3		
	1350	5,7					500	1,4-3,7		
	1320	7,0-10,4					680	0 - 1		
②a	1400	2,0- 3,8	***						1000	0,4-0,6
	1550	0 - 1								
	1350	5,7								
	1320	7,0-10,4								

EP/RSV 300-1150 A4 B254DL

ca.73	1150	16,0	**	without auxiliary spring	ca.28	300	6,0	1130	0
	1200	9,2				100	19 - 21		
	1220	6,1				300	5,7-6,3		
	1200	7,0-10,5				400	2,9-4,4		
	1250	2,4- 4,6				570	0 - 1		
	1340	0 - 1	***	with auxiliary spring				400	0,7-0,9
	1340	0 - 1							

**B. Governor Settings**

RQV 250-1300 AB 612 D

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				rev/min	Control rod travel mm		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1300	15,0-18,3	-	-	-	ca.10	100	6,5-8,0	1300	0
	1350	10,0-14,8					250	5,1-7,3		
	1400	4,6-10,8					400	3,0-4,3		
	1450	0 - 6,7					600	1,6-3,1		
	1530	0					840	0		
②a	1450	0 - 6,7							1100	0,4-0,6
	1530	0								

Torque-control travel dimension a = 1,2 mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery		⑤ Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1300	69,0 - 71,0	1320		1000	63,0 - 66,0				
				700	64,0 - 67,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 KHD 2,6a

2. Edition

En

PES 3 A 75 C 410/3 RS 1183	EP/RSV 325-1400 A8B471DL	supersedes	1.68
RS 1194	325-1400 A8B252DL	company	K H D
PES 3 A 75 C 410/3 RS 1185	325-1150 A8B474DL*	engine	F 3 L 812 D
RS 1117	325-1150 A8B260DL*		(50 PS)
.. D..			(43,5 PS)*

See page 4!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery "D" cm <sup>3</sup> /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	6,2 - 6,6	0,3	12	5,2 - 5,6	
	9	3,0 - 3,7		9	2,7 - 3,5	
	15	8,5 - 9,5		-	- - - -	
200	9	1,9 - 2,8		9	0,7 - 1,4	

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

B. Governor settings										
1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a			See page 2!							

See page 2!

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational- speed limitat Note: changed to ) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
rev/min 1	cm <sup>3</sup> /1000 strokes 2			rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1380	50,5 - 52,5 (50,0 - 53,0)	1410		785	44,5 - 47,5 (44,0 - 48,0)			325 ( 471	5,5 DL)
1130	45,5 - 47,5	1160		800	44,0 - 47,0			325 ( 474	5,5 DL)
									./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque-control travel rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

EP/RSV 325-1400 A8 B 471 DL

ca.65	1400	10,0	*			ca.21	325	5,5	1380	0			
	1430	7,4					200	19 - 21					
	1450	4,7					325	5,2-5,8					
	1400	9,8-10,2	**				500	1,4-3,6	800	0,9-1,1			
	1440	3,4- 6,7					700	0 - 1	500	1,2-1,4			
	1600	0 - 1											

EP/RSV 325-1150 A8 B 474 DL\*

ca.53	1150	10,0	*			ca.21	325	5,5	1130	0		
	1170	8,0					200	19 - 21			800	0,5-0,7
	1190	5,8					325	5,2-5,8			500	0,6-0,8
	1150	9,7-10,2	**				400	1,5-3,2				
	1200	4,0- 5,6					500	0 - 1				
	1300	0 - 1										

EP/RSV 325-1400 A8 B252 DL

ca.65	1400	10,0	*	°	ca.21	325	5,5	1380	0
	1430	7,4				200	19 - 21		
	1450	4,7				325	5,2-5,8		
	1400	9,8-10,2	**			500	1,4-3,6	500	0,5-0,7
	1440	3,4- 6,7				0 - 1	500	1,4-1,6	
	1600	0 - 1							

EP/RSV 325-1150 A8 B260 DL\*

ca.53	1150	10,0	* without auxiliary spring	ca.21	325	5,5	1130	0
	1170	8,0			200	19 - 21		
	1190	5,8			325	5,2-5,8		
	1150	9,7-10,3	400		1,5-3,2	500	0,6-0,8	
	1200	4,0- 5,6	500		0 - 1			
	1300	0 - 1	** with auxiliary spring					

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Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 48 PS / 2650 U/min

1325 49,0-51,0 1340 785 43,0 - 46,0 1,3

B 46,5 PS / 2800 U/min

1400 49,0-51,0 1420 785 42,0 - 45,0 1,3

F 46 PS / 2500 U/min

1250 47,0-49,0 1270 785 42,5 - 43,5 1,3

B 45 PS / 2650 U/min

1325 47,5-49,5 1340 785 40,5 - 43,5 1,3

B 43,5 PS / 2500 U/min

1250 45,5-47,5 1270 785 40,0 - 43,0 1,3

B 42 PS / 2300 U/min

1150 44,0 - 46,0 1170 800 42,5 - 45,5 0,75

B 41,5 PS / 2500 U/min

1250 44,5 - 46,5 1270 785 38,5 - 41,5 1,3

B 40 PS / 2300 U/min

1150 42,0 - 44,0 1170 800 40,5 - 43,5 0,75

B 40 PS / 2150 U/min

1075 43,0 - 45,0 1090 800 43,0 - 46,0 0,75

B 38,5 PS / 2150 U/min

1075 41,5 - 43,5 1090 800 41,5 - 44,5 0,75

B 37 PS / 2300 U/min

1150 39,0 - 41,0 1170 800 37,5 - 40,5 0,75

B 37 PS / 2000 U/min

1000 41,5 - 43,5 1020 800 42,5 - 45,5 0,6

B 36 PS / 2150 U/min

1075 39,0 - 41,0 1090 800 38,5 - 41,5 0,75

B 34 PS / 2000 U/min

1000 38,0 - 40,0 1020 800 38,0 - 41,0 0,6

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 33 PS / 1800 U/min								
900	39,5 - 41,5	910	800	40,5 - 43,5				0,45
B 31 PS / 1800 U/min								
900	37,0 - 39,0	910	800	38,0 - 41,0				0,45
B 28 PS / 1500 U/min								
750	40,0 - 42,0	760	700	41,0 - 44,0				0,2
B 26 PS / 1500 U/min								
750	37,0 - 39,0	760	700	38,0 - 41,0				0,2
A 37 PS / 2300 U/min								
1140	42,5 - 44,5	1150	-	-				
A 34 PS / 2000 U/min								
990	41,5 - 43,5	1000	-	-				
A 31 PS / 1800 U/min								
890	41,0 - 43,0	900	-	-				
A 26 PS / 1500 U/min								
740	41,5 - 43,5	750	-	-				

**Note:**

Engine output (F, B, A) and speed are indicated on the engine nameplate; adjustment data can be taken accordingly from Section C.

These values have been compiled in accordance with documentation and with the approval of KHD;

Standard setting, pages 1 and 2;  
throttled engines, pages 3 and 4.

When setting the reduced full-load deliveries, the dimension a (pages 3 and 4, Section C, Column 8) is to be viewed merely as a pre-setting; the dominant factor in such cases is the delivery as per Columns 2 and 5 with re-use being made of the spring retainer adjusted/readjusted by KHD.

Checking values in brackets

\* 1 mm less control rod travel than col 2

**Testoil-ISO 4113**

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 BOL 5,0 c

Edition

En

PES 6 A 85 C 320 RS 2275, Y, V  
RS 2275

RQV 250-1150 AB 594 R

RQV 250-1025 AB 756 R ./.

supersedes

company Bolinder

engine TD 50 A

Values apply to fuel-injection test tubing

1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,6 - 6,0	0,4			2,6 + 0,1*
	6 9	0,4 - 1,0 2,4 - 3,1				
200	9	1,4 - 2,3				

Adjust the fuel delivery from each outlet according to the values in

\* In the case of greater dispersion after the delivery-valve spring pre-tension accordingly.

## B. Governor Settings

..AB 594 R

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca .68	1150 1200 1250 1330 1440	15,0-18,0 11,3-15,2 7,2-12,2 0 - 7,2 0	-	-	-	ca .14	200 300 400 500 650 800	6,6-8,0 4,0-6,3 2,9-3,8 2,3-3,6 1,0-2,2 0	-	-

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	58,5 - 60,5	1170	600	53,5-56,5	1250	11,5-16,5)	(ca. RW 6)	(ca. RW 6)
1000	58,5 - 60,5	1170	600	53,5-56,5	1250	11,5-16,5)		
See page 2!						dispersion max 4		./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.71

Testoil-ISO 4113

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**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1025	15,0-18,2	-	-	-	ca. 12	200	6,4-8,0	-	-
	1050	11,2-15,8					300	4,4-6,4		
	1100	4,0-10,6					400	3,7-4,6		
							550	1,9-3,5		
②a	1140	0 - 6,4					720	0		
	1200	0								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	47,5 - 49,5								
1000	53,0 - 55,0								
Testing of shutoff device: At $n = 0$ , $n = 60$ , $n = 1025$ and $n = 1150 \text{ min}^{-1}$ it must be possible with the stop lever to move the control rod to control-rod travel 0 (stop) from the starting and full-load position.									

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 BOL 5,0 b

Edition 5.71

En

PES 6 A 85 C 320 RS 2188,  
Z, Y, X, V

RQV 250-1150 AB 594 R

supersedes  
company  
engine

6.67  
Bolinder  
D 50 A

Values apply to fuel-injection test tubing  
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,0 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,6 - 6,0	0,4			2,6 + 0,1* (max. 2,2-2,9)
	6	0,4 - 1,0				
	9	2,4 - 3,1				
200	9	1,4 - 2,3				

Adjust the fuel delivery from each outlet according to the values in 

\* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca .68	1150	15,0-18,0	-	-	-	ca .14	200	6,6-8,0	-	-
	1200	11,3-15,2					300	4,0-6,3		
	1250	7,2-12,2					400	2,9-3,8		
	1330	0 - 7,2					500	2,3-3,6		
	1440	0					650	1,0-2,2		
							800	0		

Torque control travel a = mm

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	44,0-46,0	1170	600	42,0-46,0	1250	11,5-16,5 dispersion max 4)	(ca. RW 6)	./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

### C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1000	31,5-33,5 Z							
1000	35,5-37,5 Y							
1000	37,5-39,5 X							
1000	40,0-42,0 V							

#### Testing of shutoff device:

At  $n = 0$ ,  $n = 1150$  and  $n = 1250 \text{ min}^{-1}$  it must be possible with the stop lever to press the control rod out of the starting and full-load position to control-rod travel 0 (stop).

Checking values in brackets

\* 1 mm less control rod travel than col 2

**Testoil-ISO 4113**

En

A19

A19



①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 HEN 6,1 1

Edition 3.70

En

PE 6 A 75 C 412 RS 1069 RQV 200-1300 AA 449 D  
-1250 AA 450 D

./.

supersedes  
company  
engine.

11.64  
Henschel  
522 DPF  
522 DP ./.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,4 + 0,1

Port closing at prestroke

mm (fr. m BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,7 - 5,1	0,4			
	6 15	1,9 - 2,6 10,5 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

## B. Governor Settings

..AA 449 D

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1300	15 - 18				ca. 10	100	6,6 - 8	1300	0
	1350	10,6 - 15					200	4,5 - 6,8	1200	0,1 - 0,3
	1400	5,8 - 11,8					400	2,8 - 3,8	1000	0,7 - 0,9
	1450	0 - 8,2					600	1,4 - 2,8	800	1,0 - 1,2
	1500	0 - 4,6					700	0,4 - 1,6	600	1,2 - 1,4
	1550	0					830	0		
						③a				

Torque control travel a =                      mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	59 - 61	1300	1000 700 500	60,0 - 63,0 62,5 - 65,7 58,5 - 62,5		To be specified by customer		./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

..AA 450 D

1.1

\*1 mm less control rod travel than col. 2

bar (= maximum full-load control rod travel)

ALL

# Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 DAI 1,8 t  
2. Edition

En

PES 4 A 50 C 410 RS 1010 EP/M 60 A 153 DL  
RS 1010 EP/M 60 A 156 DL See page 2!  
RS 50 EP/M 60 A 155 DL, A 157 DL

supersedes 3.65  
company Daimler-Benz  
engine OM 636

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 5	Fuel delivery cm <sup>3</sup> /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	2,2-2,7	0,3			
	9	0,8-1,4				
	18	4,5-5,2				
200	9	0,6-1,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	Vacuum mm w c 4	Control rod travel mm 5	Vacuum mm w c 6	Control rod travel mm 7	Vacuum mm w c 8	Control rod travel mm 9	Vacuum mm w c 10	Control rod travel mm 11
1,0±0,1	500-480	10	-	-	-	-	490	13,0*	0	13,9-14,1
							530	11,3-12,8	50	13,8-14,0
							600	7,4- 9,6	100	13,4-13,7
							700	2,0- 6,0	220	13,0-13,3
									300	13,0

\* See page 2!

control rod travel test (cols 4-11)

= rotational speed 500 rev/min

adjust breakaway (cols 4-5) by means of shims\*

cam adjustment (B 8-9 - C 7-8) by means of shims\*\*

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			Idle (stop)** Idle (imbalance)		Control rod travel from full-load to idle mm cm <sup>3</sup> /1000 strokes
rev/min 1	Vacuum mm wat col 2	cm <sup>3</sup> /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm <sup>3</sup> /1000 strokes 6	rev/min 7	Vacuum mm wat col 8	
1375	460	30,2-31,2	1300	415	29,7-31,7			
			900	250	29,4-31,4			
			500	75	30,7-33,7			

Checking values in brackets

3.66

Testoil-ISO 4113

## B. Governor Settings

EP/M 60 A 156 DL DAI 1,8 t -2-

Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	vacuum mm w c 4	Control rod travel mm 5	Vacuum mm w c 6	Control rod travel mm 7	Vacuum mm w c 8	Control rod travel mm ** 9	Vacuum mm w c 10	Control rod travel mm 11
0,95	500-480	10	-	-	-	-	330	12,3	150	13,2-13,3
0,05							375	7,6-11,8	200	13,0-13,3
							450	0 - 6,8	240	12,4-12,7
							500	0 - 3,5	290	12,5
**										

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load stop screw Test oil temp 40°C (104 F)			Fuel delivery characteristics			Idle (stop)** Idle (imbalance)		Control rod travel from full load to idle
rev/min 1	Vacuum mm wat col 2	cm <sup>3</sup> /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm <sup>3</sup> /1000 strokes 6	rev/min 7	Vacuum mm wat col 8	mm cm <sup>3</sup> /1000 strokes 9
1100	290	28,4-29,4	850 500	200 70	30,7-31,7 29,9-32,9	-	-	-

Checking values in brackets

\* By means of washers, set breakaway at WC 490 such that governor has regulated at WC 520 = 0.2 - 0.6 mm.

\*\* By means of washers, set breakaway at n 1100 and WC 330 such that governor has regulated at WC 360 = 0.2 - 0.6 mm!

Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 7,2 b

En

PES 6 A 80 B 412 RS 460

RQ 250/1250 A 349 d

supersedes

company

MAN

engine

D 0836 M1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,3			
	6	1,2 - 2,0				
	15	9,8 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications Control rod travel mm 9	rev/min 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16	1250 1280 1300 1320 1380	14,5-14,8 7,8-13,2 3,8-11,2 0 - 8,6 0	540	0	100 200 300 400 440	6,5-8,1 5,3-7,3 2,9-5,3 0 -1,9 0	800 1000 1200	15,8-16 15,4-15,7 14,7-15

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1230	68,5 - 70,5	650	650 800	68,5 - 71,5 70,0 - 73,0		

Checking values in brackets

28,10.60

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# Test Specifications Fuel Injection Pumps ② and Governors

En

RS 516, Ay, y RQ 250/1100 A 301 D  
PES 6 A 90 B 410 RS 494 A 425 D  
RS 2020 y

supersedes 13.4.62  
company Daimler-Benz  
engine OM 326(172PS) \*  
(180PS)\*\*  
(150PS)\*\*\*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 0,1 mm (from BDC) RW 18

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,1 - 7,6	0,4			
	6	2,1 - 3,3				
	12	11,3 - 12,8				
200	9	4,4 - 6,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1000	14,7-15,3	1000	15	1100 1120 1140 1160 1220	14,6- 15 10 - 14 5 - 11,5 0 - 8,6 0	520	0	150 200 250 300 420	6,4-8,1 5,5-7,5 4,3-6,4 2,8- 5 0	400 500 600	15,7-16,3 15,3-15,8 15 -15,3

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
700	91,0 - 93,0	500	500 1080	90,5 - 93,5 92,0 - 96,0	100	14,9 - 15,9
						./.

RS516  
RS494

Checking values in brackets

## B. Governor Settings

DAI 10,8 g 2

-2-

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel  
on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel mm
700	98,0 - 100,0	500	500	94,5 - 98,5	100	14,9 - 15,9	
			1080	98,5 - 102,5			
1000	91,0 - 93,0	500	500	88,5 - 91,5	100	14,9 - 15,9	
			700	89,5 - 92,5			

RS516y  
RS516Ay  
RS2020y

RS516  
A 425 D

Checking values in brackets

## B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel  
on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel mm

En Checking values in brackets

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 DAI 1,8 w

1. Edition

En

PES 4 A 50 B 410 RS 144,Z EP/MZ 60 A 159 DL  
PES 4 A 50 C 410 RS 1010,Z EP/MZ 60 A 160 DL

"Z" See page 2!

supersedes

company

engine

-  
Daimler-Benz  
OM 636.930  
(PKW)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,7 + 0,1$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	2,2-2,7	0,3			
	9	0,8-1,4				
	18	4,5-5,2				
200	9	0,6-1,2				

Adjust the fuel delivery from each outlet according to the values in:

## B. Governor Settings

Pe without .. z

Torque control travel mm	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop at least mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
0,9+0,1	500-480	10	-	-	-	-	475	12,6*	50	13,4-13,5
							575	8,5-10,3	150	13,2-13,5
							725	2,0- 6,0	350	12,6-12,9

\* See page 2!

control rod travel test (cols 4-11)

= rotational speed 500 rev/min

adjust breakaway (cols 4-5) by means of shims\*

cam adjustment (B 8-9 - C 7-8) by means of shims\*\*

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			Idle (stop)** Idle (imbalance)		Control rod travel from full-load to idle
rev/min	Vacuum mm waf col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm waf col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm waf col	mm cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7		8
1700	450	30,2-31,2	1000	205	29,2-31,2	0	0	6,4-6,8
			500	45	29,7-31,7			
			250	ca.620	6,5-8,5			
			dispersion max. 1,5					

Checking values in brackets

8.66

**Testoil-ISO 4113**



**B. Governor Settings**

"7"

Leakage			Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
Torque control travel	Vacuum pressure drop	Time at least	Vacuum	Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel
mm	mm water col	s	mm w c	mm	mm w c	mm	mm w c	mm **	mm w c	mm
1	2	3	4	5	6	7	8	9	10	11
0,9+0,1	500-480	10	-	-	-	-	475	11,4*	50	12,3
							575	7,1-8,1	150	12,0-12,3
							700	2,6-5,4	350	11,4-11,7

control rod travel test (cols. 4-11)  
 rotational speed 500 rev/min  
 adjust breakaway (cols. 4-5) by means of shims\*  
 cam adjustment (8 8-9 - C 7-8) by means of shims\*\*

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full load stop screw Test oil temp. 40 C (104 F)			Fuel delivery characteristics			Idle (stop)** Idle (imbalance)		Control rod travel from full load to idle
rev/min	Vacuum mm wat. col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat. col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat. col	mm cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8	8
1700	450	25,7-26,7	1000	205	24,2-26,2	0	0	5,2-5,6
			500	45	24,7-26,7			
			250	ca. 580	6,5-8,5			
				dispersion max.	1,5			

Checking values in brackets

- \* By means of washers, set breakaway at WC 475 such that governor has regulated at WC 500 = 0.2 - 0.6 mm.

Testoil-ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MB 5,1 c

Edition 8.69

En

PES 6 A 70 B 410 RS 64 Z ROV 250 - 1400 A 140 D  
PES 6 A 70 B 410 RS 1034,Z RQV 250 - 1500 A 49 D

supersedes DAI 5,1 c  
(3.64)  
company Daimler-Benz  
engine OM 321

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

250 - 1400

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
65±1,5	1400	15 - 17,6					150	7,4- 8	1400	0
	1440	11,6-15					250	5,4- 7,4	1200	0,4-0,6
	1520	4,4- 9,6					400	3,6- 4	800	0,8-1,0
	1600	0 - 4,2					700	1,7-3,4	500	0,8-1,0
	1660	0					950	0		
						③a				

Torque control travel a = 1,0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	48,5 - 50,5	1420	500	49,5 - 52,5	100	mind. 7,9		
			1400	49,5 - 53,5				
								./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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B6

①

Torque control travel a **1,1** mm

\* 1 mm less control rod travel than co: 2

## En

# Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 DAI 4,6 a 1

Edition 3.64

En

PES 6 A 70 B 410 RS 64 RQ 250/1400 A 200 D  
RS 122 See page 2!

supersedes 1.5.61  
company: Daimler-Benz  
engine: OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,9 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
1300	13,6-14,4	1300	14	1400 1420 1450 1480 1550	13,6- 14 10,5- 14 3 -11,4 0 - 8 0			150 200 300 400 430	6,4-8,2 5,5-7,8 2,7-5,3 0 -1,5 0	400 500 600 1000 1200	15,8-16,8 15,7-16,2 15,4-15,9 14,2-14,6 14 -14,1

Torque-control travel on flyweight assembly dimension a =  $0,6$  mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes/ mm 7
RS64							
1000	43,5 - 45,5	500		500 700 1380	44,5 - 48,5 45,5 - 48,5 43,5 - 46,5	100	mind. 7,9
							./.

Checking values in brackets

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B8

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## B Governor Settings

DAI 4,6 a 1

-2-

2

Checking of slider PRG check ①		Full load speed regulation				Idle speed regulation				Torque control ③	
rev/min	Control rod travel mm	Setting point	Control rod travel mm	Test specifications	④	Setting point	Control rod travel mm	Test specifications	⑤	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel  
on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7
RS122						
1000	32,0 - 34,0	500	500 700 1380	35,0 - 38,0 33,5 - 36,5 32,5 - 35,5	100	mind. 7,9

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

Test at n decreasing  
rev/min increasing pressure in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)

Notes

(1) when n =

En

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

**Testoil-ISO 4113**

**1A**

Edition 5.72

supersedes 5.71  
company Daimler-Benz  
engine OM 314  
Ahlmann power shovel  
(65 bhp - 1)  
Stat engine 75PS-2)  
Yale+.Towne(63PS-3)  
Stat. engine 78PS-4)  
Yale +Towne(66PS-5)

### A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 + 0,1$  mm (from BDC)

Adjust the fuel delivery from each outlet according to the values in  

250-1225 (1)

The numbers denote the sequence of the tests

\* 1 mm less control rod travel than col 2

0,5-1,0 mm control rod travel less than column 2

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung  
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Imprimerie en République Fédérale d'Allemagne par Robert Bosch GmbH

R 10

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever		Control rod travel	Degree of deflection of control lever		Control rod travel	Degree of deflection of control lever		Control rod travel	Torque-control travel	
1	rev/min	mm	4	rev/min	mm	7	rev/min	mm	rev/min	mm
2	3		5	6		8	9		10	11

## 300-1200 A1B424D (2, 3)

ca.67	1200	16,0	
	1250	11,0	*
	1290	6,4	
	1270	7,0-10,2	**
	1350	1,0- 4,0	
	1440	0 - 1	

ca.27	300	6,0	
	100	19-21	**
	300	5,7-6,3	as required
	400	3,2-4,6	
	580	0 - 1	

## 300-1325 A1B424D (4)

ca.73	1325	16,0	
	1370	10,5	*
	1400	6,2	
	1380	7,5-10,2	**
	1420	2,7- 5,0	
	1520	0 - 1	

ca.27	300	6,0	
	100	19 - 21	
	300	5,7-6,3	**
	400	2,3-4,5	
	580	0 - 1	

## 350-1200 A1B631D (5)

ca.66	1200	14,0	
	1240	9,6	*
	1280	4,8	without auxiliary spring
	1250	7,0-9,6	** with auxiliary spring
	1300	2,4-4,4	
	1380	0 -1,5	

ca.27	350	6,0	
	200	19 - 21	1180
	350	5,7-6,3	
	450	3,0-4,4	700 0,2-0,4
	600	0 -1,5	450 0,9-1,1

Testoil-ISO 4113

①

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

MB 8,0 e

Edition 10.69

En

PE 6 A 90 C 410 RS 2124

RQV 300-1325 AB 689 DL

AB 698 DL

EP/RSV 300-1200 A1 B479DL

300-1100 A1 B530DL

supersedes

company

Daimler-Benz

engine

OM 327

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 \pm 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,4 - 6,9	0,4			
	6 15	2,9 - 3,8 13,8 - 15,3				
200	6	0,2 - 1,0				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

### B. Governor Settings

RQV... AB 689 DL, .. 698 DL

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1325 1380 1440 1500 1590	15,0-18,0 10,5-15,5 5,0-11,0 0 - 7,0 0	-	-	-	ca. 12	100 250 400 600 750	6,3-8,0 5,1-6,8 3,1-4,6 1,0-2,4 0	1325 1100 900 500	0 0,1-0,3 0,4-0,6 0,6-0,8
						③a				

Torque control travel a = 0,7 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	75,5-77,5	1325: bei 1350 0,5-1,0mm RW less than column 2	900 700 500	73,5-76,5 75,5-78,5 68,5-71,5	100	13,7-14,3	To be specified by customer (→ 698 D)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2



**B. Governor Settings**

EP/RSV 300-1200 A1 B 479 DL

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1220 1250 1300 1300 1350 1450	16,0 13,2 7,2 5,8-8,8 2,0-5,0 0 - 1	without auxiliary spring  with auxiliary spring			ca.28	300 100 300 450 700	7,5 19,0-21,0 7,2-7,8 3,0-5,2 0 - 1	1200 1000 800 400	0 0,4-0,6 0,9-1,1 0,9-1,1

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	74,0-76,0	1220	1000 800 500	71,0-74,0 69,0-73,0 65,0-69,0	100	15,7-16,3	300	7,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

**B. Governor Settings**

EP/RSV 300-1100 A 1 B 530 D

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.62	1100 1140 1190 1200 1250 1350	16,0 12,2 6,6 5 - 7 1,8-4,4 0 - 1	without auxiliary spring			ca.27	300 100 300 400 500 650	7,5 19 - 21 7,2-7,8 4,8-6,1 0,6-4,1 0 - 1	1070 800 500	0 0,8-1,0 0,8-1,0

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
ca.10	mm RW - Carry out adjustment on engine	1120			100	15,7-16,3	300	7,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

En

# Test Specifications Fuel Injection Pumps ①A and Governors

40

MB 8,7 h  
1. Edition

En

PE 6 A C 410 RS 2124,Z EP/RSV 300-1100 A 1 B 568 D (1),(2)  
RS 2124 EP/RSV 300-1100 A 1 B 479 D (3)  
RS 2124 EP/RSV 350- 800 A 1 B 681 D (4)  
..D .. RS 2124 EP/RSV 350-1250 A 1 B 690 D (5)  
RS 2124 EP/RSV 350-1150 A 1 B 732 D (6)  
RS 2124 EP/RSV 350- 900 A 1 B 727 D (7)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes  
company Daimler-Benz  
engine OM 360  
(117 PS - 1)  
(127 PS - 2)  
(150 PS - 3)  
(110 PS - 4)  
(160 PS - 5-6)  
(132 PS - 7)

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	6,4 - 6,9	0,4			
	6	2,8 - 3,8				
	15	13,8 - 15,3				
200	9	3,7 - 4,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

EP/RSV 300-1100 A 1 B 568 D (1 - 2)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.65	1100	16,0	without auxiliary spring			ca.27	300	6,0	1080	0
	1170	10,4					150	19 - 21	700	0,6-0,8
	1220	4,6					300	5,7-6,3	330	1,2-1,4
②a	1200	4,6-8,8	with auxiliary spring				400	3,2-4,5		
	1250	1,6-4,2					600	0-1		
	1340	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1080	53,5-55,5	1125-1135*	700	53,5-56,5	100	ca.11,9	300	6,0	
			500	54,5-57,5					
1080	67,5-69,5		700	70,5-73,5					
			500	70,0-73,0					

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.74

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## B. Governor Settings

EP/RSV 300-1100 A 1 B 479 D (3)

MB 8,7 h

-2-

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a)  (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm (1)
1	2	3		4	5	6	7	8	9	10	11
ca. 56	1100	16,0					ca. 21	300	6,0	1080	0
	1150	9,8	*					200	19 - 21	800	0,1-0,3
	1170	5,4						300	5,7-6,3	400	0,4-0,6
	1150	7,0-11,0						400	2,9-4,3		
	1200	2,3- 4,7	**					550	0 - 1		
	1280	0									
						(3a)					

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1080	80,5-82,5	1125-1135*	700	81,0-84,0	100	ca. 11,9	300	6,0	
			500	76,0-79,0					

Checking values in brackets

± 1,0

\* 1 mm less control rod travel than col 2

## B. Governor Settings

EP/RSV 350-800 A 1 B 681 D (4)

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	①a ②a	Degree of deflection of control lever	rev/min	Control rod travel mm ④	Degree of deflection of control lever	rev/min	Control rod travel mm ③	rev/min	mm ①
1	2	3		4	5	6	7	8	9	10	11
ca.42	800	16,0		* without auxiliary spring			ca.21	350	5,5	800	0
	850	10,1						200	19 - 21	400	0,5-0,7
	880	5,2						350	5,2-5,8		
	810	ca.8,5		450				1,7-3,4			
	870	ca.3,0		560				0 - 1			
	960	0,3-1,0							③a		

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
800	61,0-63,0	820-830*	500	63,0-66,0	100	ca. 11,9	350	5,5	
			870-890	3,0 mmRW					

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

1

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 72	1250 1300 1350	16,0 11,6 5,4	*			ca. 28	350	6,0	1230	0
							200 350 450 620	19 - 21 5,7-6,3 2,9-4,5 0 - 1	400	0,5-0,7
ca. 69	1260 1325 1400	ca. 8,6 ca. 3,6 0,3-1,0	**							
②a										

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3		4	5	6	7	8	9	
1230	70,0-72,0	1265-1275*		900 600 1320	66,5-69,5 65,5-68,5 1335 3,5 mm RW	100	ca. 11,9	350	6,0	

Checking values in brackets

± 1,0

\* 1 mm less control rod travel than col. 2

**B. Governor Settings**

EP/RSV 350-1150 A 1 B 732 D (6)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	1150 1190 1220	16,0 10,6 5,8	* without auxiliary spring			ca. 24	350	6,0	1130	0
ca. 57	1150 1220 1300	ca. 9,5 ca. 3,5 0,3-1,0					200 350 450 600	19 - 21 5,7-6,3 2,6-4,2 0 - 1	500	0,4-0,6
②a			** with auxiliary spring							

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3		4	5	6	7	8	9	
1130	74,0 - 76,0 (73,0 - 77,0)	1165-1175*		800 600	77,5-80,5 (76,5-81,5) 75,5-78,5 (74,5-79,5)	100 1210	ca. 11,9 - 1225 3,5 mm RW			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**B. Governor Settings**

350-900 A 1 B 727 D (7)

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.56	900	16,0	without auxiliary spring			ca.30	350	6,2	880	0
	1000	9,0					200	19 - 21		
	1050	4,0					350	5,9-6,5		
	1000	7,3-10,2	with auxiliary spring				450	1,9-3,9	500	0,9-1,1
	1050	2,7- 6,1					560			
2a	1160	0,3- 1,0								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
(7 with 727 D)									
880	68,0 - 70,0	920 - 930*	-	-	100	ca. 11,9			
			970-985	4,0 mm RW	970-	985= 4 mm RW			

Checking values in brackets

± 1,0

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAI 8,0 b

Edition 9.67

En

PE 6 A 90 C 410 RS 2124

RQ 300/1175 AB 599 DL

RQ 300/1325 AB 600 DL ./.

RQ 300/1325 AB 658 DL ./.\*

supersedes

company: Daimler-Benz

engine: OM 327

(160 PS)

(170 PS)\*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,15 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	6,4 - 6,9	0,4			
1000	6 15	2,9 - 3,8 13,8 - 15,3				
200	6	0,2 - 1,0				

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

RQ 300/1175 AB 599 DL

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1100	14,7-15,3	1100	15,0	1175	14,8-15,0	550	0	200	6,8-8,1	650	15,9-16,0
				1220	9,8-13,5			300	4,4-6,5		
				1250	6,0-11,5			400	0,5-2,8	780	15,0-15,2
				1300	0 - 7,2			450	0		
				1380	0						

At n = 1200 governor must break away by 0.5-1.0 mm from full load!

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		3a		3b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1150	79,5-81,5 (79,0-82,0)	450		1000	78,0 - 81,0	100	ca. 16 mm RW
				800	77,5 - 81,5		
				500	71,0 - 75,0		

Checking values in brackets

Testoil-ISO 4113

## B. Governor Settings

RQ 300/1325 AB 600 DL

DAI 8,0b

-2- (2)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1330 1380 1440 1530	14,6-14,9 9,0-13,2 0 - 8,6 0	560	0	200 300 400 460	6,7-8,1 4,2- 6,6 0,4-3,2 0	700 850 1000	15,8-16,0 15,3-15,6 14,9-15,1

Torque-control travel on flyweight assembly dimension a = **0,35** mm \*\* Speed regulation At 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	Control rod travel mm
1300	75,5 - 77,5 (75,0 - 17,0)	450		1000 700 500	73,0 - 76,0 (72,5 - 76,5) 74,0 - 78,0 (73,5 - 78,5) 68,0 - 72,0 (67,0 - 72,5)	100	ca. 16 mm RW

\*\* At n = 1350 governor must break away by 0.5-1.0 mm from full load!

Checking values in brackets

Testoil-ISO 4113

## B. Governor Settings

RQ 300/1325 AB 658 DL

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1325 1370 1400 1450 1530	14,3-14,7 10,4-14,0 6,4-11,8 0 - 7,8 0	560	0	200 300 400 460	6,7-8,1 4,3-6,7 0,6-3,2 0	700 900 1050	15,8-16,0 15,1-15,4 14,7-14,9

Torque-control travel on flyweight assembly dimension a = **0,4** mm \*\* Speed regulation At 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	Control rod travel mm
1300	74,0 - 76,0 (73,5 - 76,5)	450		900 700 450	69,5 - 72,5 (69,0 - 73,0) 71,5 - 75,5 (71,0 - 76,0) 66,5 - 70,5 (66,0 - 71,0)	100	ca. 16 mm RW

En Checking values in brackets

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

DAI 8,7 b

Edition 3.66

En

PES 6 A 90 C 410 RS 2173

EP/RSV 300-1000 A 4 B 460 DL

EP/RSV 300-1000 A 4 B 373 L

supersedes

company

engine

Daimler-Benz

MB 856

MB 866

(120PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,4	0,4			
	6	2,7 - 3,5				
	15	13,3 - 14,3				
200	9	3,1 - 4,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

EP/RSV 300-1000 A 4 B 460 DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 62	1000	16,0	without auxiliary spring			ca. 27	300	6	980	0
	1050	10,8					100	19 - 21		
	1090	5,0					300	5,7-6,3	800	0,6-0,8
	1070	5,2-9,5	with auxiliary spring				400	3,0-4,5	500	1,3-1,5
	1120	2,1-4,2					600	0 - 1		
2a	1220	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9	
1	2								
980	70,0-72,0	1010-1030	700	81,5 - 84,5	100	20 mm RW	300	6	
			500	78,5 - 81,5					
									./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113



**B. Governor Settings**

EP/RSV 300-1000 A 4 B 373 L

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.62	1000	16	without auxiliary spring			ca.27	300	6	980	0
	1040	11,7					100	19 - 21	500	0
	1080	6,1					300	5,7-6,3	350	1,0-1,6
	1080	4 - 8	with auxiliary spring				380	2,5-3,5		
	1120	1,4-3,7					500	0 - 1		
2a	1200	0 - 1								

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
980	71,5 - 73,5	1010-1030				100	21 mm RW	300	6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 STE 6,0 d  
2. Edition

En

PE 6 A 85 C 412	RS 2182	RQ 250/1400	AB671D	(1)
	RS 2182	RQ 250/1400	AB710D	(2)
(D)	RS 2296	RQ 250/1400	AB737D	(3)
PE 6 A 80 C 412	RS 2261	RQ 250/1400	AB704D	(4)
	RS 2261	RQV 250/1400	AB681D	(5)
	RS 2261	RQV 250/1400	AB759D	(6)

See page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 10.69  
company S t e y r  
engine WD 610 r (120PS-1)  
WD 610.23 (120PS-2)  
WD 610.19 (132PS-3)  
.20  
WD 609 e (150PS-4.5)  
WD 609.60 (170PS-6)

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	4,1 - 4,5	0,3	9	5,5 - 6,0	
1000	6	1,2 - 2,0		6	2,3 - 3,1	
	15	10,3 - 11,4			- - -	
200	9	2,9 - 3,7		6	0,1 - 0,7	

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

RQ .. AB671D (1)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1350	12,5-13,1	1350	12,8	1420	12,4-12,8	510	0	100	6,3-8,1	600	15,8-16,0
				1450	8,0-12,6			200	4,8-6,8	900	14,7-15,0
				1500	0 - 8,0			300	2,3-4,5	1200	12,2-12,5
				1580	0			410	0		

Torque-control travel  
on flyweight assembly dimension a = 1,0 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1380	45,0 - 47,0	500		900	52,0 - 55,0	100	ca. 12 mm RW
				500	50,0 - 53,0		

Checking values in brackets

12.72

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B22

022



## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.65	1400	15,0-17,6	-	-	-	ca.10	150	7,4-8,0	681 D	0 1,0-1,2 0 1,2-1,4
	1440	11,6-15,0					250	5,4-7,4	1000	
	1520	4,4- 9,6					500	3,2-4,0	600	
	1600	0 - 4,2					700	1,7-3,4	759 D	
	1660	0					950	0	1000	
						(3a)			600	

Torque control travel a = 1,1 mm (681D); 1,3 (759D)

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	9
1400	0,4 kp/cm <sup>2</sup> 73,5-75,5		800	0,4 kp/cm <sup>2</sup> 78,0-81,0	100	ca.20mmRW	
			500	0,1 kp/cm <sup>2</sup> 47,0-50,0	Change-over point 250-190 U/min		
1400	0,6 kp/cm <sup>2</sup> 82,0-84,0		800	0,6 kp/cm <sup>2</sup> 93,0-96,0			
			500	0 kp/cm <sup>2</sup> 47,0-50,0			

Checking values in brackets

\* 1 mm less Control rod travel than col 2

### Setting of smoke limiter:

- Basic setting of pump (section A) and governor (section B) without smoke limiter.
- Set full-load delivery (delivery data with charge-air pressure) at full-load stop screw of governor; check fuel-delivery characteristics.
- Attach smoke limiter.
- Set start and end of adjustment at guide sleeve (spring seat) of diaphragm housing - n = 500 min<sup>-1</sup>: RQ..704D, RQV..759D
 

Start	- kp/cm <sup>2</sup>	:	0.08-0.11	0.05
End	- kp/cm <sup>2</sup>	:	0.23-0.26	0.48-0.50
Difference	- mm CRT	:	approx. 2.0	approx. 3.4
- Set full-load delivery at 0 kp/cm<sup>2</sup> at bell crank of smoke limiter.
- Correct full-load delivery -0.5 ccm at maximum control-rod travel and with corresponding speed of fuel-delivery characteristics using hexagon bolt of housing in smoke limiter, max. charge-air pressure; measure fuel-delivery characteristics with increasing speeds.
- Test automatic control-rod stop (RQV switching point)
- Additional final measurement (with running-in cap - RQ only).

In the case of governor with no smoke limiter:

"without" = without running-in cap  
"with" = with running-in cap

# Test Specifications Fuel Injection Pumps and Governors

En

PES 4 A 50 B 410 RS 50, Z EP/M 60 A 102D  
 RS 68, Z, Y 102D  
 (C) RS1010, Z, Y, X, W 102D, 126D, 149D  
 (D) RS1026 102D, 126D  
 RS1097 102D  
 RS1142 126D

supersedes  
company  
engine

DAI 1,7i1  
3.64  
Daimler-Benz  
OM 636 VI U

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	5	6	7
1000	12	2,2 - 2,7	0,2		1,9 - 2,3	
	9	0,8 - 1,4			0,7 - 1,2	
	18	4,5 - 5,2				
200	9	0,6 - 1,1			0,4 - 1,0	

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_

## B. Governor Settings

Torque control travel mm	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
1,0+0,1	500-480	10	300	12,3	-	-	430	12,3	40	13,3-13,4
							500	8,3-11,6	75	12,9-13,3
							700	1,5- 4,0	125	12,3-12,7

control rod travel test (cols. 4-11)  
 = rotational speed 500 rev/min  
 adjust breakaway (cols. 4-5) by means of shims\*  
 cam adjustment (B 8-9 - C 7-8) by means of shims\*\*

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	mm cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7		8
RS 50 RS1010 RS1097	1000	300	28,2 - 29,2	750 500	125 50	28,7 - 30,7 30,7 - 32,7		
								./.

Checking values in brackets

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

RS50Z, RS68, RS1010X

1000	300	23,7 - 24,7	750	125	24,2 - 26,2			
			500	50	26,2 - 28,2			

RS68Z, RS1010Z, RS1026, RS1142

1000	300	27,2 - 28,2	750	125	27,7 - 29,7			
			500	50	29,7 - 31,7			

RS68Y, RS1010Y

1000	300	25,2 - 26,2	750	125	25,7 - 27,7			
			500	50	27,7 - 29,7			

RS1010W

1000	300	29,2 - 30,2	750	125	28,7 - 30,7			
			500	50	32,2 - 34,2			

Checking values in brackets

\* 1 mm less control rod travel than col 2

**Testoil-ISO 4113**

En

C2

C2

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 1,8 i

2. Edition

En

PES 4 A 50 B 410 RS 50 EP/RSV 250-950 A 4/15  
 RS 68,Z A 4 A 60  
 RS 1010, Z,Y,X A 4 B 60  
 -1025 A 4 B 196 L

supersedes 2.64  
 company Daimler-Benz  
 engine OM 636

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,2-2,7	0,3			
	9	0,8-1,4				
	18	4,5-5,2				
200	9	0,6-1,1				

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

## B. Governor Settings

250-950

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 57	950	16	without auxiliary spring			ca. 24	250	6	930	0
	1000	10					100	19-21	420	0
	1050	2					250	5,7-6,3	300	1,2-1,8
	1000	8-11	with auxiliary spring				340	1,8-3,8		
	1040	2,6-6					380	0 -2,6		
	1080	0 -2,5					450	0		
	1150	0 - 1				3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
930	28,2-29,2	960-980	RS 1010,	RS 50				
930	23,7-24,7	960-980	RS 1010 Y,	RS 68				
930	27,2-28,2	960-970	RS 1010 Z,	RS 68 Z				
930	22,7-23,7	960-970	RS 1010 X					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.65

The numbers denote the sequence of the tests

**B. Governor Settings**

250-1025

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 64	1025	16	without auxiliary spring			ca. 26	250	6	1000	0
	1060	12,4							400	0
	1100	6,6							300	1,2-1,8
	1080	7,8-10,4	with auxiliary spring				300	3,9-4,9		
	1110	3,4- 6,6					340	1,5-3,7		
②a	1220	0 - 1				450	0 - 1			

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle		Control rod travel mm	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	cm <sup>3</sup> /1000 strokes 7	8	rev/min 9	
RS 1010	27,7-28,7	1030-1040							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**D. Adjustment Test for Manifold Pressure Compensator**Test at n = rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

En



①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 SAM 2,8 a 2,8b

Edition 9.64

En

PES 1 A 80 B 310/3 S 28, 258 RQV 200-500 A 53, 111  
2 28, 259  
3 61

supersedes 12.52  
company Samofa  
engine 2 S 108  
3 Q108

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	9	3,7 - 4,1	0,3			
	6 15	0,3 - 0,9 10,1 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
66±1,5	500 520 560 590	16,5-19,5 10 - 15,5 0 - 6,5 0				10±1,5	100 200 300 380	6,8-8,8 4,6-7 2,1-3,8 0		
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
480	72,5 - 74,5	500 - 520						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 SAM 2,8 b  
Edition 9.64

En

PES 1 A 80 B 310/3S299,533  
2 300,534,1086

EP/RSV 200-750 A 7/25  
28,A382

supersedes 9.59  
company Samofa  
engine S 108

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 + 0,1$  mm (from BDC) (S299) 2,7+0,1 (S300) (533) (534) (1086)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	9	3,7 - 4,1	0,3			
	6	0,3 - 0,9				
	15	10,1 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 48	750	16	without auxiliary spring			ca. 21	200	6	730	0
	790	10					100	19 - 21	390	0
	830	2,5					200	5,7-6,3	250	1,2-1,8
	800	6,5-9,5	with auxiliary spring				300	1,6-3,8		
	830	2,8-4					330	0 - 3		
	880	0 - 2					400	0 - 1		
2a	900	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9	
1	2								
730	74,5-76,5	760 - 770							

Checking values in brackets

\* 1 mm less control rod travel than col 2

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①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 4,6a4  
(4,6a 5)

Edition 3.64

En

PES 6 A 70 B 410 RS 64

RQV 250/900/1400 A 186

supersedes 8.59  
company: Daimler Benz  
engine OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
65±1,5	1400 1440 1480 1520 1600	15 - 18 9,6 - 14 5 - 11 0 - 7 0	52±1,5	900 950 1050 1300 1420	12,4-15,4 8 - 13,4 3 - 3,4 3 - 3,4 0	10±1,5	150 250 350 600 750 870	6 - 8 4,4-6,6 3,6-4,6 3,6-4 1 - 3,6 0		

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5b) (5a)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	43,5-45,5	1405-1420			100	mind.7,9	900	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 DAI 4,6 a 3

Edition 3.64

En

PES 6 A 70 B 410 RS 64 RQ 250/1450 A 19 D  
RS 64 z /1325 AA 19 D

supersedes 5.63  
company: Daimler-Benz  
engine: OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

RQ 250/1450 A 19 D

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1000	14 - 14,8	1000	14,4	1460 1480 1500 1520 1580	14,2-14,4 8,5-14,4 3 - 12 0 - 9 0			200 250 300 380 440	5,8 - 8 4,6 - 7 3 - 5,5 0 - 2,6 0	400 500 700 900	15,8- 21 15,2-15,7 14,6-14,9 14,4-14,5

Torque-control travel  
on flyweight assembly dimension a = 0,5 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1000	45,5 - 47,5	500	500 700 1430	45,5 - 49,5 46,5 - 49,5 46,5 - 48,5	100	mind. 7,9
						./.

Checking values in brackets

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C9

C9

RQ 250/1325 AA 19 D

②

Torque-control travel on flyweight assembly dimension a	0.5	mm	Speed regulation At	1 mm less control rod travel
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### Checking values in brackets

Torque-control travel on flyweight assembly dimension a -	mm	Speed regulation At	RQ 250/1450 A 19	1 mm less control Drod travel
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En  Checking values in brackets

**Testoil-ISO 4113**

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 20.11.70

En

PES 8 A 75 C 320 RS 2286

RQV 300-800/1500 AB769,  
770,771

supersedes

company:

engine:

I H C

DV 550 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0	6,2-6,5				
1500	ca. 6,5	max. 3,1 0,1-1,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			
300	ca. 7,0	min. 2,5 0,1-0,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

RQV ... 769, 770, 771

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 63	1620 1700 1800 1900	13,8-16,6 7,3-11,8 0 - 5,0 0	ca. 41	800 900 1500 1650	8,4-11,4 5,3- 5,7 5,3-5,7 0	ca. 10	200 350 500 680	6,0-8,0 3,6-5,0 2,0-3,2 0		
						3a				

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) idle switching point		Torque-control (5) travel Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
200PS- 1500 (RW 10,0 mm)	** 771) 63,5-66,5 (RW 10,0 mm)	1540: 0,1mm- 1625:2,5-3,5 mmRW ***	700	58,5-61,5	100	8,1-10,4 ** ***		governor less than column 2
180PS-	** 769)	1540:0,1mm- 1625:2,5-3,5 mm RW ***	700	54,5-57,5	100	8,1-10,4		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

C11

C1.1

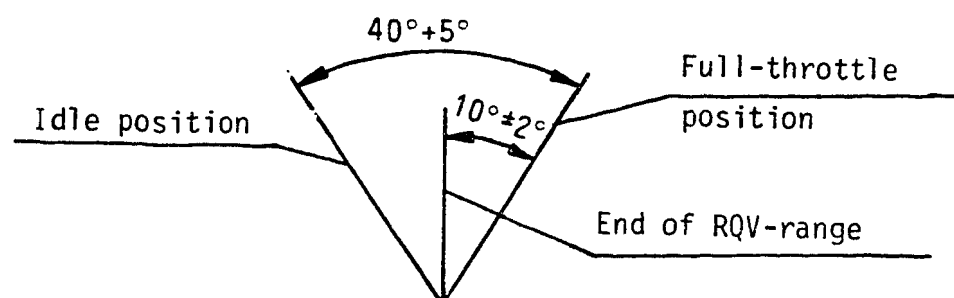
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The special operating conditions result in the following special governor setting: (governor 769, 770, 771) :

1. Calibrate slider, measure sliding-sleeve travel and calibrate plate cam in accordance with WPP 001/4 - 3rd Supplement, illustrations 5 ... 8.  
(With picture 5, use is to be made of device as per Fig. 22!)
2. Fit governor cover, attach protractor and control-rod-travel measuring device.
3. Check average rated speed as well as high and low rated speed. Provisionally set engine-speed limitation (Section C, Column 3).

It is to be noted that the control-lever travel from the idle position to full-load speed regulation is  $40^\circ + 5^\circ$  and  $10^\circ \pm 2^\circ$  from the end of the RQV range to full-load speed regulation (see diagram).



Correct in accordance with Figs. 5-6 and 8 if the above figures are not obtained!

4. Set full-load control-rod travel and delivery; measure fuel-delivery characteristics.
5. Set engine-speed limitation, measure starting delivery and idle.

Sliding-sleeve travel	min <sup>-1</sup>	mm CRT
	0 - 200	Start
	400	2.2-2.8
	900	7.4-7.6
	1500	7.4-7.6
	1800-1900	End (11mm)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 MB 1,8r 1

En

PES 4 A 50 C 410 RS 1025	EP/RSV 650-1200 A6B453 (1)	supersedes	MB 1,8r (12.68)
C 320 RS 1143	650-1200 A6B434 (2)	company	Daimler-Benz
C 410 RS 1025	650- 900 A7B510 (3)	engine	OM 686
C 410 RS 1025	650-1200 A5B729 (4)		

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	2,2 - 2,7	0,2			
	9	0,8 - 1,4				
	18	4,5 - 5,2				
200	9	0,6 - 1,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

650 - 1200 A5B453 (1)

① Upper rated speed rev/min	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed	④ Control lever deflection in degrees	rev/min	Control rod travel mm	③ Torque control	Control rod travel mm
Degree of deflection of control lever	2	3	4 5 6	7	8	9	10	11
ca. 51	1200	16,0	without auxiliary spring	ca. 29	650	7,5	1180	0
	1240	12,2			150	19,0-21,0		
	1280	7,6			650	7,2 - 7,8		
②a	1250	10,0-12,0	with auxiliary spring		750	4,0 - 5,5	400	1,4-2,0
	1350	3,8- 4,8			1000	0 - 1,0		
	1550	0,3- 1,0						

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop	⑥ Rotational speed limit	③a Fuel delivery characteristics	Starting fuel delivery ⑤	④a Idle stop
Test oil temp 40°C (104 °F)	Note changed to ) rev/min		Idle	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min
1	2	3	4	5
(1)				
1180	24,7-25,7 (24,2-26,2)	1200 *		

Checking values in brackets

0,2-0,5 \* 1 mm less control rod travel than col 2

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**B. Governor Settings**

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min	Control rod travel mm 11
	mm	mm rev/min	4	5	6		rev/min	mm		
ca. 51	1200	16,0	without auxiliary spring			ca. 29	650	6,0	1180	0
	1250	11,2					100	19 - 21	600	0
	1300	5,6					650	5,7-6,3	400	1,4-2,0
2a	1270	7,0-10,0	with auxiliary spring				700	4,0-5,0		
	1350	2,8- 4,7					900	0 - 1		
	1500	0,3- 1								

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat. Note: changed to ...) rev/min	3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1180	25,2 - 26,2	1200*						

Checking values in brackets

0,2-0,6 \* 1 mm less control rod travel than col. 2

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**B. Governor Settings**

650-900 A7B510 (3)

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min	Control rod travel mm 11
	mm	mm rev/min	4	5	6		rev/min	mm		
ca. 48	900	16,0	without auxiliary spring			ca. 34	650	7,5	880	0
	910	12,4					100	19,0-21,0	650	0,7-0,9
	925	6,6					650	7,2- 7,8		
2a	915	8,8-11,5	with auxiliary spring				725	2,9- 4,9		
	950	4,4- 5,5					925	0 - 1,0		
	1050	0,3- 1,0								

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat. Note: changed to ...) rev/min	3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(3) 880	30,7 - 31,7	910						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

**B. Governor Settings**

650-1200 A5 B729L (4)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 52	1200	16,0	without auxiliary spring			ca. 27	650	7,3	1180	0
	1250	11,7					250	19 - 21		
	1290	7,5					650	7,0-7,6		
ca. 51	1200	ca. 13,5	with auxiliary spring				750	1,8-4,3	400	0,9-1,5
	1280	ca. 7,0					860	0 - 1		
②a	1400	0,3-1,0								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm³/1000 strokes 2	rev/min 3		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1180	29,2-30,2	1210-1220*						650	7,3
				1280-	1295: 7 mm RW				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm³/1000 strokes 2	rev/min 3		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

8. Edition

VDT-WPP 001/4

En

PES 6 A 95 <sup>C</sup><sub>D</sub> 420 LS 3007  
3024

EP/RSV 375-1000 A2 B515DR  
EP/RSV 375-1100 A2 B516DR,  
599DR, 659DR, 688DR, 695DR, 697DR  
EP/RSV 375-1050 A2 B621DR  
EP/RSV 375-875 A7 B696P

supersedes 7.7.73  
company Case  
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0 \pm 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	8,4 - 9,0	0,4			
	6	4,0 - 5,0				
	15	16,5 - 17,8				
200	6	1,4 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

EP/RSV 375-1000 A2 B515DR

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees 7 rev/min 8 Control rod travel mm 9			③ Torque control rev/min 10 Control rod travel mm 11	
ca. 39	1020	9,8	without auxiliary spring			ca. 20	375		1000	0
	1050	7,0					150	19 - 21	450	0,4-0,7
	1090	3,0	with auxiliary spring				375	5,2-5,8		
	1040	9,2-9,8					450	1,6-3,4		
②a	1100	3,0-4,2					550	0 - 1		
	1180	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1 cm <sup>3</sup> /1000 strokes 2		⑥ Rotational-speed limitat Note changed to ) rev/min 3		③a Fuel delivery characteristics rev/min 4 cm <sup>3</sup> /1000 strokes 5		Starting fuel delivery Idle ⑤ rev/min 6 cm <sup>3</sup> /1000 strokes 7		④a Idle stop rev/min 8 Control rod travel mm 9	
1000	102,5-104,5 (101,5-105,5)	1040		750	107,5-111,5 (106,5-112,5) max. 110,0 (111,0)	100	13,5-14,5	375	18-22 cm <sup>3</sup> /1000
				650	10,5-17,5 (9,5-18,5)				
				1100					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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12.74

**B. Governor Settings**

EP/RSV 375-1100 A2 B516DR, 599DR

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.39	1120	10,8	without auxiliary spring			ca.18	375	5,7	1100	0
	1160	5,8					150	19 - 21		
	1190	2,5					375	5,4-6,0		
	1140	10,4-11,2	with auxiliary spring				450	1,4-3,3	600	0,2-0,5
	1200	3,0-4,5					540	0 - 1		
②a	1260	0,3-1,0								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	113,5-115,5 (112,5-116,5)	1140-1155*		800	114,0-118,0 (113,0-119,0)	100	13,5-14,5	375	17-23
				700	max. 117,0		cm³/1000		
				1200	11,5-19,5 (10,5-20,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

EP/RSV 375-1050 A2 B621DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.38	1075	10,9	without auxiliary spring			ca.17	375	5,6	1050	0
	1150	7,8								
	1220	4,5								
	1090	10,4-11,2	with auxiliary spring				150	19 - 21	450	0,5-0,8
	1150	2,6-4,0					375	5,3-5,9		
2a	1220	0,3-1,0				450	1,3-3,2			
						530	0 - 1			

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1050	119,5-121,5 (118,5-122,5)	1090		750	125,5-129,5 (124,5-130,5)	100	13,5-14,5	375	17-23
				660	max. 128,5				cm³/1000
				1150	8,5 - 16,5 (7,5 - 17,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

The numbers denote the sequence of the tests

**B. Governor Settings**

EP/RSV 375-1100 A2 B659DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
ca.43	1120	11,4	without auxiliary spring			ca.19	375	5,9	1100	0	
	1150	6,8					150	19 - 21	400	0,6-0,9	
	1180	2,8					375	5,6-6,2			
	1140	10,8-11,6	with auxiliary spring				450	1,8-3,6			
	1200	2,0- 3,8					540	0 - 1			
2a	1250	0,3- 1,0									

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1100	136,0-138,0 (135,0-139,0)	1140-1155*	750	143,0-147,0 (142,0-148,0) max. 146,0	100	13,5-14,5	375	17 - 23	
			650	20,5 - 28,5 (19,5 - 29,5)					
			1200						

Checking values in brackets  $\pm 1,0$ 

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

EP/RSV 375-1100 A2 B688DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel	Control rod travel				Control-lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel	
1	mm	mm rev/min	4	5	6	7	8	9	10	11	
2a	1120	9,5	without auxiliary spring			ca.21	375	5,7	1100	0	
	1160	5,0					150	19 - 21			
	1190	2,0							375		5,4-6,0
	1140	9,2-9,8	with auxiliary spring	450	2,0-3,5						
	1200	2,6-4,0					550	0 - 1			
	1260	0 - 1									

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1100	94,5-96,5 (93,5-97,5)	1130-1145	800	93,5-97,5 (92,5-98,5) max. 96,0	100	13,5-14,5	375	17-23	
			700	12,5-20,5 (11,5-21,5)					
			1200						

Checking values in brackets  $\pm 1,0$ 

\* 1 mm less control rod travel than col. 2

The numbers denote the sequence of the tests

**B. Governor Settings**

EP/RSV 375-1100 A 2 B695DR

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.44	1120	10,0	* without auxiliary spring			ca.21	375	5,6	1100 500	0 0,2-0,5
	1150	6,2					150	19 - 21		
	1180	2,6					375	5,3-5,9		
	1140	9,2-10,2	** with auxiliary spring		450		1,7-3,5			
	1200	2,4- 3,9			550		0 - 1			
②a	1260	0,3-1,0								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm³/1000 strokes 2	rev/min 3		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	104,5-106,5 (103,5-107,5)	1140-1155*		750	105,0-109,0 (104,0-110,0)	100	13,5-14,5	375	17-23
				650	max. 108,0				
				1200	9,5- 17,5 (8,5- 18,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

EP/RSV 375-875 A7 B696R

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 58	885	13,6	*			ca. 30	375	8,0	875	0
	930	6,8					150	19 - 21		
	960	1,8					375	7,7-8,3		
	930	6,3-8,0	450	2,0-4,7						
	960	2,3-5,3	550	0 - 1						
2a	1030	0,3-1,0	**						350	0,2-0,8

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm³/1000 strokes 2	rev/min 3		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
875	132,0-135,0 (131,0-136,0)	880-895		900	91,5-121,5 (90,5-122,5)	100	13,5-14,5	375	17-23
				940	10,5- 18,5 ( 9,5- 19,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

The numbers denote the sequence of the tests

**B. Governor Settings**

EP/RSV 375-1100 A2 B697DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.42	1120	10,5	without auxiliary spring			ca.18	375	5,7	1100	0
	1140	9,0					150	19 - 21		
	1180	3,0					375	5,4-6,0	500	0,1-0,4
	1140	10,4-11,4	450	1,2-3,3						
2a	1200	2,8- 4,2	with auxiliary spring			540	0 - 1			
	1260	0,3- 1,0								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	125,5-127,5 (124,5-129,5)	1140-1155*		750	126,5-130,5 (125,5-131,5)	100	13,5-14,5	375	17-23
				650	max. 130,5				
				1200	20,5- 28,5 (19,5- 29,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

1. Edition

VDT-WPP 001/4

En

PE 6 A 90 D 320 RS 2412	RQV 250-1100 AB861DR (1)	
PE 6 A 90 D 321 RS 2413	RQ 250/1300 AB863DR (2)	
321		
PE 6 A 90 D 320 RS 2414	RQ 250/1200 AB862DR (3)	
	250/1300 (4)	

supersedes

company	Enasa	
engine	9135.30	(1)
	9130	(2)
	9135.02	(3)
	9135.00	(4)

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

RQV .. 361 DR (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1135 1200 1280 1370	15,0-18,3 8,8-13,6 0 - 7,7 0	-	-	-	ca. 13	120 250 350 480	8,8-11,0 5,9- 8,3 1,8- 4,4 0	1135 550	8,3 0 0,4-0,6

Torque control travel a = 0,5 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤b ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤ Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
(1) 0,6	bar 86,5-88,5 (85,5-89,5)	1140-1155*	0,6 900  0 500	bar 89,0-92,0 (88,0-93,0) bar 54,0-58,0 (53,0-59,0)	100	mind.20mmRW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

BOSCH

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C21



## B. Governor Settings

RQ 250/1300 AB 863DR Ppe.2412,2413u.2414 -2-  
862 DR (2 u. 4)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	15,7-16,3	550	16,0	1320 1350 1370 1450	14,8-15,4 6,0-13,4 0 -10,8 0	510	0	100 200 300 400	6,2-8,1 4,7-6,8 2,0-4,4 0	600 700	15,8-16,0 15,4-15,7

Torque-control travel  
on flyweight assembly dimension a 0,2 mm

Speed regulation At 1340-1360=

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
ca.	10 mm RW				→ 863D:	100	18,7-19,3

Checking values in brackets

Testoil-ISO 4113

## B. Governor Settings

RQ 250/1200 AB862DR (3)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	15,7-16,3	550	16,0	1220 1300 1350 1440	15,0-15,4 5,4- 9,0 0 - 7,5 0	510	0	150 250 350 420	6,4-8,1 4,3-6,5 0,8-3,3 0	600 700	15,8-16,0 15,4-15,7

Torque-control travel  
on flyweight assembly dimension a 0,2 mm

Speed regulation At 1240-1260=

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
ca.	10 mm RW						
Adjustment test - n = 500 min <sup>-1</sup> - decreasing pressure (pump 2412 with 861 D): Setting 0.38 bar = 0.2-0.3 mm decrease in CRT Measurement 0.25 bar = 1.1-1.3 mm decrease in CRT							

En Checking values in brackets

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 BOL 5,0 a  
Edition 5.72

E<sub>2</sub>

PES 6 A 85 C 320 RS 2160  
S2160, Z,Y,X,V  
S 2160

RQV 200-1200 AB574R  
RQV 200-1200 AB743R, 751R  
RQV 200-1400 AB635R

(1) supersedes 5.71  
(2) company: Bolinder  
(3) engine D 50 A

Values apply to fuel-injection test tubing  
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Differences cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000  200	12	5,6 - 6,0	0,3			2,5 + 0,1* (max. 2,2-2,9)
	6	0,1 - 0,6				
	9	1,8 - 2,5				
	9	0,9 - 1,6				

Adjust the fuel delivery from each outlet according to the values in  

\* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

## B. Governor Settings

RQV 200-1200 AB 574R, (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1200 1250 1300 1400 1520	18,0-21,0 14,0-18,2 9,7-15,0 0 - 8,0 0	-	-	-	ca. 10	100 200 300 400 550	5,6-8,0 3,3-5,5 2,7-3,7 1,8-3,1 0,3-1,5	-	-
						③a				

Torque control travel a = mm

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1200	47,7-49,7	1220	500	41,0-44,0	1300	11,5-16,5 dispersion max.3)	(ca. RW 7)	
	see (2)							./

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## B. Governor Settings

AB751R (2)  
RQV 200-1200 AB743R

BOL 5,0 a

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca .68	1200 1250 1300 1380 1470	15,0-18,0 10,8-15,2 6,4-12,0 0 - 6,8 0	-	-	-	ca .12	100 250 350 450 630	7,0-8,0 4,9-7,1 2,4-4,5 1,6-3,0 0		
						(3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
Z 1200	34,5 - 36,5	34,0 - 36,0			(Column 6-8, see (1))		
Y 1200	39,0 - 41,0	38,5 - 40,5					
X 1200	41,0 - 43,0	40,5 - 42,5					
V 1200	44,0 - 46,0	43,0 - 45,0					

Checking values in brackets

\* 1 mm less control rod travel than col 2

## B. Governor Settings

RQV 200-1400 AB 635 R (3)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca .68	1400 1440 1520 1600 1700	15,0-18,0 12,0-16,0 6,0-11,2 0 - 6,4 0	-	-	-	ca .12	100 250 300 400 600 810	6,4-8,0 3,2-5,1 2,8-3,8 1,8-3,2 0,3-1,9 0		
						(3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
(3) 1400	47,7-49,7	1420	500	39,5-42,5	1500	11,5-16,5 dispersion max.3	(ca. RW 7)
Testing of shutoff device: At n = 0, n = 60, n = 1200 and n = 1400 min <sup>-1</sup> it must be possible with the stop lever to move the control rod to control-rod travel 0 (stop) from the starting and full-load position.							

Checking values in brackets

\* 1 mm less control rod travel than col 2

En

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 SCL 4,3 a  
Edition 2.67

En

PES 4 A 75 C 410 RS 1104 \* EP/RSV 250-1000 A1B 426D

supersedes 11.65  
company (SCHL 4,3a)  
engine Schlüter  
SD 100 W4

PES 4 A 70 C 410 RS 1193\*\*  
75 \*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC) 7 0\*\*

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	6,5- 7,0	0,4			
	6	1,2- 2,3				
	18	10,9-11,9				
200	6	0,6- 1,5				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control-lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 51	1000	12,0	without auxiliary spring			ca. 22	250	5,5	980	0
	1030	8,4					100	19 - 21	950	0
	1050	5,4					250	5,2-5,8	800	0,3-0,5
2a	1030	5,7-9,4	with auxiliary spring				350	2,8-4,1	700	0,5-0,7
	1060	3,8-5,4					450	0 -2,1	350	0,5-0,7
	1100	1,0-3,2					550	0 - 1		
	1200	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to )				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel
1	2	3		4	5	6	7	8	9
980	45,0 - 47,0	1020		700	46,5 - 49,5	100	19 mm RW	250	5,5
				500	45,0 - 48,0				
									./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

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All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,1 \pm 0,1$  mm (from BDC)  $7,5 \varnothing^*$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,7 -	0,3			
	6	1,9 - 2,6				
	15	10,4 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 51	1000	12,0	without auxiliary spring			ca. 22	250	5,5	980	0
	1030	8,4					100	19 - 21	950	0
	1050	5,4					250	5,2-5,8	800	0,3-0,5
2a	1030	5,7-9,4	with auxiliary spring				350	2,8-4,1	700	0,5-0,7
	1060	3,8-5,4					450	0 - 2,1	350	0,5-0,7
	1100	1,0-3,2					550	0 - 1		
	1200	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2		4			6	7	8	9
980	50,5 - 52,5	1010-1020	900	49,5 - 52,5		100	20 mm RW	250	5,5
			700	51,5 - 54,5					
			500	48,0 - 51,0					

Checking values in brackets

\* 1 mm less control rod travel than col 2

En

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

En

PES 4 A 85 C 410 RS 2246 EP/RSV 250-1100 A1 B168L 289 L  
PES 4 A 90 C 410 RS 2231 EP/RSV 250-1100 A1 B154DL  
B288DL  
B289L

supersedes  
company  
engine

Kaelble  
MD 215 v -

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

\*\*

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 8,5 Ø cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery 9 Ø cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	4,9 - 5,5		7	5,9 - 6,4	
1000	6 15	1,3 - 2,1 12,3 - 13,1		6 12	2,3 - 3,1 9,5 - 10,4	
200	6	0,1 - 0,9		9	3,2 - 4,1	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

.. A 1 B 168, 289,

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control-lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
mm	mm	mm rev/min	4	5	6	7	8	mm	10	mm
1	2	3						9		11
ca. 64	1100	16,0	without auxiliary spring			ca. 27	250	6,0	1080	0
	1150	12,1					100	19 - 21		
	1200	6,8					250	5,7-6,3		
2a	1170	8,5-11,0	with auxiliary spring				350	1,1-3,5	400	0
	1250	7,8- 3,5					450	0 - 1		
	1350	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to )				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
		1120							
** Port closing difference between control-rod travel 9 mm and 21 mm = 3-4° (8,5 Ø) camshaft, 12 mm and 21 mm = 4,5-5,5° (9 Ø) camshaft.									

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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The numbers denote the sequence of the tests

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## B. Governor Settings

..A 1 B 134 DL, 288 DL

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.64	1100	16,0	without auxiliary spring			ca.27	250	6,0	1080	0
	1150	12,1					100	19 - 21		
	1200	6,8	with auxiliary spring				250	5,7-6,3	900	0,6-0,8
2a	1170	8,5-10,5					400	2,0-4,0	500	0,9-1,1
	1260	1,0- 4,0					600	0 - 1		
	1350	0 - 1								

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4  
Edition 9.5.72

En

PES 4 A 85 C 320/3 RS 2284	EP/RSV 250-1250 A 1 B 279	supersedes	1.7.69
PES 6 A 85 C 320/3 RS 2285	200-1250 A 1 B 525	company	21.1.71
PES 6 A 85 C 320/3 RS 2260	B 279	engine	Motori VM
PES 4 A 85 C 320/3 RS 2338	350-1250 A 1 B 279		VM 104 SU, 954 SU
PES 6 A 85 C 320/3 RS 2339			VM 106 SU, 956 SU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,7 \pm 0,1$  RW 9 2260  
 $3,0 \pm 0,1$  RW 9 mm (from BDC) 2284/85, 2338/39

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,9 - 5,5	0,4			
	6	1,3 - 2,1				
	15	12,3 - 13,1				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

250-1250

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
ca.70	1250	16,0	without auxiliary spring			ca.26	250	5,5	1200	0	
	1300	11,0									
	1350	4,2									
	1330	4,0-9,0					with auxiliary spring				
	1380	1,0-3,4									
	1440	0 - 1									
2a											

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1230	53,0 - 55,0	1270				100	9,9-11,9 2338/39	200	6,0 525

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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The numbers denote the sequence of the tests

## B. Governor Settings

200-1250

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 70	1250	16,0	*			ca. 25	200	6,0	1230	0
	1300	11,0								
	1340	6,0					100	19 - 21		
	1340	3,5-8,0					200	5,7-6,3	400	0
	1380	0,8-3,5					300	2,2-3,9		
2a	1460	0 - 1	**				420	0 - 1	250	1,2-1,8

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3		4	5	6	7	8	9	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

## B. Governor Settings

350-1250

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 70	1250	16,0	* without auxiliary spring			ca. 27	350	6,0	1230	0
	1300	11,0					200	19 - 21		
	1350	4,2					350	5,7-6,3	500	0
	1320	6,2-9,6					420	1,5-2,6	380	1,2-1,8
	1360	2,1-5,0					500	0 - 1		
2a	1450	0 - 1	** with auxiliary spring							

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3		4	5	6	7	8	9	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications

## Fuel Injection Pumps ②

### and Governors

VDT-WPP 001/4 STE 6,0h

Edition 12.71

En

PE 6 A 85 C 412 RS 2303

RQ 250/1400 AB741DL (2)

supersedes

(D)

RQV 250-1400 AB681DL (1)

company

Steyr

RQV 250-1400 AB804DL (2)

engine

610.72

For full-load setting pay attention to "without" or "with" running-in capsule (RQ governor). Refer to page 3 for smoke-limiter setting!

(170 PS - 1)

610.60,69,70

(150 PS - 2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,5 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery "C" cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery "D" cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5	0,4	9	4,1 - 4,5	
	6	1,3 - 2,1		6	0,6 - 1,4	
	15	12,3 - 13,1				
200	6	0,1 - 0,9		9	1,4 - 2,2	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

RQ .. AB 741 DL (2)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	1400	14,3-14,5	510	0	100	6,2-8,1	1000	15,7-16,0
				1450	8,0-12,6			200	4,9-6,8		
				1500	0 - 7,7			300	2,3-4,5	1200	14,7-15,0
				1580	0			410	0		

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1400	72,5-74,5 without			0,4	kp/cm <sup>2</sup>		
1400	68,5-71,5 with			800	71,5-74,5		
				0	kp/cm <sup>2</sup>		
				500	58,0-61,0		
							./.

Checking values in brackets

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca .65	1400 1440 1520 1600 1660	15,0-17,6 11,6-15,0 4,4- 9,6 0 - 4,2 0	-	-	-	ca .10	150 250 500 700 950	7,4-8,0 5,4-7,4 3,2-4,0 1,7-3,4 0	-	-
						(3a)				

Torque control travel a = 0 mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
0,4 1400	kp/cm <sup>2</sup> 78,0-80,0	1430	0,4 800 0 500	kp/cm <sup>2</sup> 69,0-72,0 kp/cm <sup>2</sup> 56,0-59,0				

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

**B. Governor Settings**

RQV .. AB 804 DL (2)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca .65	1400 1440 1520 1600 1660	15,0-17,6 11,6-15,0 4,4- 9,6 0 - 4,2 0	-	-	-	ca .10	150 250 500 700 950	7,4-8,0 5,4-7,4 3,2-4,0 1,7-3,4 0	1400 900 600	0 0,1-0,3 0,8-1,0
						(3a)				

Torque control travel a = 0,9 mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
0,4 1400	kp/cm <sup>2</sup> 72,5-74,5	1430	0,4 800 0 500	kp/cm <sup>2</sup> 71,5-74,5 kp/cm <sup>2</sup> 58,0-61,0				

Checking values in brackets

\* 1 mm less control rod travel than col 2

En

Setting of smoke limiter:

1. Basic setting of pump (Section A) and governor (Section B) without smoke limiter.
2. Set full-load delivery (quantity data with charge-air pressure) at full-load stop screw of governor:  
Test fuel-delivery characteristics.
3. Attach smoke limiter.
4. Set start and end of adjustment at guide sleeve (spring seat) of diaphragm housing:
 

<u>with...741 DL</u>	Start = 0.18 kp/cm <sup>2</sup> End = 0.28 kp/cm <sup>2</sup>	) difference approx. 0.5 mm control-rod travel
with..681 DL	Start = 0.16 kp/cm <sup>2</sup> End = 0.28 kp/cm <sup>2</sup>	) difference approx. 0.3 mm control-rod travel
with..804 DL	Start = 0.18 kp/cm <sup>2</sup> End = 0.27 kp/cm <sup>2</sup>	) difference approx. 0.9 mm control-rod travel
5. Set full-load delivery with 0 kp/cm<sup>2</sup> at bell crank of smoke limiter.
6. Correct full-load delivery - 0.5 cm<sup>2</sup> with maximum control-rod travel and at corresponding speed of fuel-delivery characteristics at hexagon bolt of housing in smoke limiter, max. charge-air pressure; measure fuel-delivery characteristics with increasing speeds.
7. Test automatic control-rod stop, measure switching point  
 $n = 130 - 200 \text{ min}^{-1}$  (RQV governor)
8. Additional final measurement with disposable capsule (RQ governor)

**Testoil-ISO 4113**

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
21.1.71

En

PES 4 A 85 C 320/3 RS 2284  
PES 6 A 85 C 320/3 RS 2285

EP/RSV 250-1250 A 1 B 279  
200-1250 A 1 B 525  
supersedes company engine

1.7.69  
Motori VM  
VM 104 SU, 954 SU  
VM 106 SU, 956 SU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 + 0,1 mm (from BDC) bei RW9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,9 - 5,5	0,4			
	6	1,3 - 2,1				
	15	12,3 - 13,1				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in  

250 - 1250

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	mm	mm rev/min	4	5	6	7	8	mm	10	mm
ca. 70	1250	16,0	without auxiliary spring			ca. 26	250	5,5	1200	0
	1300	11,0					100	19 - 21	600	0
	1350	4,2					250	5,2-5,8	300	1,2-1,8
	1330	4,0-9,0	300	4,0-5,0						
	1380	1,0-3,4	430	0 - 1						
2a	1440	0 - 1	with auxiliary spring							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1230	53,0-55,0	1270				100	7,4-8,9		

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 70	1250	16,0	without auxiliary spring			ca. 25	200	6,0	1230	0
	1300	11,0					100	19 - 21		
	1340	6,0					200	5,7-6,3	400	0
	1340	3,5-8,0					300	2,2-3,9		
②a	1380	0,8-3,5	with auxiliary spring				420	0 - 1	250	1,2-1,8
	1460	0 - 1								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1230	53,0 - 55,0	1270				100	7,4-8,9	200	6,0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 7.9.73

En

PES 3 A 85 C 410 RS 1228 EP/RSV 250-1000 A1 B12, 46  
PES 4 A 85 B 410 RS 556 EP/RSV 200- 900 A1 A316  
PES 2 A 85 C 410 RS 2032  
PES 3 A 85 C 410 RS 2052 EP/RSV 250- 900 A1 B316, 273  
PES 3 A 85 D 410/3 RS1285 EP/RSV 250-1000 A1B1068  
PES 4 A 85 D 410/3 RS2410 A1B1059

supersedes 14.2.67  
company 9.4.70  
engine Motovi VM  
VM 60 DA  
VM 45 DA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,7 + 0,05 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" u. "D" cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
	9	6,0 - 6,4	0,4			
1000	6 16	2,0 - 2,8 - - - -				
200	6	1,0 - 1,9				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

200-900 A1 A316

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 47	900 930 980	16,0 10,4 5,5	*			ca. 21	200	6	880	0
	950 1000 1100	8,8-11,6 2,0- 4,0 0 - 1					100 200 250 450	19 - 21 5,7-6,3 4,2-5,2 0 - 1	400 250	0 1,2-1,8
ca. 50	500 950 1000 980 1050 1150	16,0 10,0 5,4 5,6-9,6 0,9-3,2 0 - 1	* without auxiliary spring			ca. 24	250 100 250 350 450	8 19 - 21 5,7-6,3 1,0-3,4 0 - 1	880 400 300	0 0 1,2-1,8
			** with auxiliary spring							

Port closing difference between control-rod travel 13 mm and 21 = 6-7,5° camshaft.

Testoil-ISO 4113

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imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca .55	1000	16,0	*			ca .25	250	6,0	980	0
	1050	11,5								
	1100									
	1060	9 - 11	**						290	1,2-1,8
	1140	1,0-3,5								
②a	1220	0 - 1					440	0 - 1		

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery		⑤ Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
ca.	10 mm RW	- 910 Carry out adjustment on engine 1020						200	6
								250	6 (→ 316)
									./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

250...1000 A 1 A oder B 11,12,46

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control							
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm						
1	2	3	4	5	6	7	8	9	10	11						
ca. 55	1000	16	* without auxiliary spring			ca. 25	250	6	980	0						
	1060	10,5					100	19 - 21	400	0						
	1100	5,7									200	7,6-8,8	300	1,2-1,8		
	1100	3,5-7,8													300	3,7-4,8
	1150	0,5-3,2														
②a	1250	0 - 1	** with auxiliary spring													

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery		⑤ Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En



# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 5.12.72

En

PES 6 A 90 D 410 LS 2377

EP/RSV400-1250 A2 B640DL

RQV 300-1100 AB 838 DL ./.

supersedes

company

engine

8.8.72

G M C - USA

DH 478

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

End of pump delivery

4,0 + 0,1

mm (from BDC)

Mark on drive 24° from perpendicular!

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,0 - 5,5	0,4			
	6	2,1 - 3,1				
	12	7,8 - 8,8				
200	9	2,2 - 3,2				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

EP/RSV ... 640 DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 48	1250	16,0	without auxiliary spring			ca. 21	400	6,0	1230	0
	1300	11,6					150	19 - 21		
	1350	6,8					400	5,7-6,3		
2a	1340	6,2-9,2	with auxiliary spring				550	2,2-4,0	500	0,8-1,0
	1400	2,0-3,7					740	0 - 1		
	1540	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1250	71,0-73,0 (70,5-73,5)	1270		500	60,5 - 63,5 (60,0 - 64,0)	100	8,9-9,9	400	7,25-11,25

Checking values in brackets

\* 1 mm less control rod travel than col 2

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## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1430 1500 1600 1730	15,0-17,8 10 -14 1,5- 8,1 0	-	-	-	ca. 10	200 400 600 890	7,1-8,0 2,5-4,2 1,6-3,0 0	1400 650 400 1000 1430	0 1,0-1,2 1,8-2,6 4,5-4,9 8,3
						(3a)				

Torque control travel a = 1,1 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point	Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
1400	69,5-71,5	1130	1200 800	66,0-69,0 60,5-63,5	Change-over point 180-250 300 100 1510	12,25-16,25 89,25-99,25 23,25-31,25	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm

En

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4  
Edition 16.9.70

En

PES 8 A 75 C 320 RS2286

RQV 300-1500 AB726D, 724D, 722D

supersedes 20.1.70

See page 4!

RQ 300/1500 AB727D, 725D, 723D

company 3.3.70

1 - 8 - 7 - 3 - 6 - 5 - 4 - 2

engine 17.3.70

22.7.70

I H C

DV 550/460

(200, 180, 160 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

End of pump delivery RW 10,0  
Port closing at prestroke 3,95 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0	6,2 - 6,5				
1500	ca. 6,5	max. 3,1 0,1 - 1,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			
300	ca. 7,0	min. 2,5 0,1 - 0,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

RQV .. AB726DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1600 2000	15,0-18,2 0	-	-	-	ca. 10	250 400	6,5-8,2 2,9-4,5	1500	0
ca. 65	1500 1600 1700 1940	15,0-17,6 10,0-14,0 4,6-10,4 0					500 650 360	2,3-3,3 1,1-2,1 0	1200 1000 700	0 0,7-0,9 1,0-1,2

Torque control travel a = 1,1 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5b)	Starting fuel delivery idle switching point (6)	Torque-control travel (5)			
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1500 (RW)	53,5-65,5 10,0)	1540: 0,1mm- 1625: 2,5-3,5 mm less than column 2	1000	59,5-63,5	100 300 (Cyl. 1-4-6-7)	8,1-10,4 1,4- 1,8		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

## B. Governor Settings

RQV .. AB8722DR

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1600	15,0-18,2	-	-	-	ca. 10	250	6,5-8,2	1500	0
	2000	0					400	2,9-4,5		
ca. 65	1500	15,0-17,6					500	2,3-3,3	1200	0
	1600	10,0-14,0					650	1,1-2,1	1000	0,6-0,8
	1700	4,6-10,4					860	0	700	0,9-1,1
	1940	0				(3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(180PS)		1540: 0,1mm-	1000	54,0-58,0	100	8,1-10,4		
1500	59,0-61,0 (RW 9,5)	1625: 2,0-3,0 mm ** less than column 2			300	1,4 -1,8 (Cyl. 1-4-6-7)	ca. RW	5,3

Checking values in brackets

\* 1 mm less control rod travel than col 2

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1600	15,0-18,2	-	-	-	ca. 10	250	6,5-8,2	1500	0
	2000	0					400	2,9-4,5	1300	0,4-0,6
ca. 65	1500	15,0-17,5					500	2,3-3,3	1000	0,5-0,7
	1600	10,0-14,0					650	1,1-2,1	700	0,5-0,7
	1700	4,6-10,4					860	0		
	1940	0				(3a)				

Torque control travel a = 0,6 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(160PS)		1540: 0,1mm-	1000	45,0 - 48,0				
1500	49,0-51,0 (RW 8,4)	1625: 1,5-2,5 mm **						

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

## B. Governor Settings

RQ..AB 727 DR

-3-

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	19,6-20,4 (VH ca. 49°)	650	20,0	1500	17,8-18,2	590	0	100	9,8-12,6	700	19,9-20,0
**				1600	7,0-13,6			200	8,4-11,5	900	19,2-19,5
				1650	0 -10			300	6,2-9,5		
				1770	0			400	2,8-6,2	1100	18,3-18,6
								530	0		

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3		4	5	6	7
(200PS)							
1500	63,5-65,5 (RW 10,0)			1000	59,5 - 63,5	100	8,1 - 10,4
	** Breakaway					300	1,4 - 1,8 (Cyl. 1-4-6-7)
						***	

Checking values in brackets

Testoil-ISO 4113

RQ .. AB 723 DR

## B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	19,6-20,4 (VH ca. 49°)	650	20,0	1500	17,6-18,0	630	0	100	9,8-12,6	700	19,9-20,0
**				1600	7,0-13,7			200	8,4-11,5	900	19,2-19,5
				1650	0 -10			300	6,2- 9,5		
				1770	0			400	2,8- 6,2	1100	18,2-18,6
								530	0		

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3		4	5	6	7
(180PS)							
1500	59,0-61,0 (RW 9,5)			1000	54,0 - 58,0	100	8,1 - 10,1
						300	1,4 - 1,8
						***	1-4-6-7) (ca. RW5,3)

En Checking values in brackets

## B. Governor Settings

RQ .. AB 725 DR

-4-

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Control rod travel mm	Test specifications rev/min	Setting point rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	19,6-20,4 (VH ca.49°) Abregelbeginn: 1540 = max.0,1 mm- 1625 = 1,5-2,5 mm RW less than full load	650	20,0	1500 1600 1670 1780	18,3-18,6 7,6-14,6 0 - 9,2 0	620	0	100 200 300 400 520	9,7-12,6 8,3-11,4 6,1- 9,2 2,6- 6,0 0	1100 1250 1350	19,7-20,0 19,0-19,4 18,6-18,9

Torque-control travel  
on flyweight assembly dimension a

0,35 mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7
1500	49,0 - 51,0 (RW 8,4)		1000	45,0 - 48,0 (ca.RW 9,1)	100	8,1 - 10,4
					300	1,4 - 1,8 (Cyl. 1-4-6-7) (ca.RW 5,3)

Checking values in brackets

Supply pressure = 1.5 bar  
now = 2.5 bar - can be seen from groove at hexagon socket of  
overflow valve!

### Further test instructions:

1. With vehicle stopped, check whether stop is reliably attained with shutoff device from full-load setting. It is to be ensured in the process that the pin of the control-rod stop does not move back as well.
2. Set shutoff device to 0.5 mm - 1.0 mm.
3. In start-of-delivery setting of cyl. 1 (on drive) and with CRT 10.0 (200 bhp), 9.5(180 bhp) and 8.4 (160 bhp) effect movement with fixing device (press down pin in doing so) until pin is in camshaft groove. Tighten device and check again; correct if necessary. Then drill and pin pump housing. In this position, set coupling such that the jaws are exactly horizontal; in doing so, check whether coupling turns easily.

Caution: Fixing device must not be used when tightening coupling!

4. After setting idle delivery, check locking and unlocking (between 200 and 250).

**Testoil-ISO 4113**

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 KHD 10,0

Edition 25.11.65

En

PE 8 A 90 C 410 LS 2190

RQ 250/1400 AB 575 DL (1)  
250/1300 (2)

supersedes

company:

engine:

KHD

FB 8 L 312  
( 200 PS-1)  
( 180 PS-2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4	0,4			
	6	2,3 - 3,1				
	15	14,2 - 15,5				
200	9	3,8 - 4,6				

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

## B. Governor Settings

250/1400

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1300	13,6-14,4	1300	14,0	1400	13,8-14	520	0	150	6,2-8,1	700	15,8-16
				1440	4 - 12			250	4,2-6,5	850	15,2-15,5
				1460	0 - 9,4			350	0,8-3,2	1000	14,2-14,6
				1520	0			420	0		

Torque-control travel on flyweight assembly dimension a = 0,6 mm 0,05

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1380	74,5 - 76,5						
							./.

Checking values in brackets

E5

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25

## B. Governor Settings

250/1300

KHD 10,0

-2-

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	1300 1320 1350 1420	14,0-14,4 9,8-14,0 0 - 9,5 0	500	0	100 200 300 400	6,2-8,1 4,8-6,8 2,0-4,5 0	700 900 1050	15,8-16,0 15,1-15,4 14,4-14,6

Torque-control travel  
on flyweight assembly dimension a

0,5

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a		Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /- 1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /- 1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
1280	74,5 - 76,5						

Checking values in brackets

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12

Torque-control travel  
on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a		Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /- 1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /- 1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7

En Checking values in brackets

E6

e6



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

20.11.65

En

PES 6 A 85 C 320 RS 2166

EP/RSV 250-1000 A2 B 330 R

supersedes  
company Volvo-Penta  
engine TD 5260

Testing with "B" leads !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,6 - 6,0	0,3			2,5 ± 0,1 (max. 2,2-2,9)
	6	0,1 - 0,5				
	9	1,4 - 2,1				
200	9	0,8 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 37	1000 16,0 1050 12,2 1100 7,2		without auxiliary spring			ca. 17	250 6		980 0	
	1100 4,8-8,7 1180 1,1-3,1 1300 0 - 1						100 19 - 21 250 5,7-6,3 350 3 -4,4 450 0 -2,2 550 0 - 1		460 0 320 1,2-1,8	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min cm <sup>3</sup> /1000 strokes 1 2		6 Rotational-speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm <sup>3</sup> /1000 strokes 6 7		5 Idle stop rev/min Control rod travel mm 8 9	
900	57,0-59,0	1010-1030	500	50,0-53,0		100	mind. 10mmRW	250	6

Checking values in brackets

\* 1 mm less control rod travel than col 2

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E7

Testoil-ISO 4113

Reverse side of pump 32166 with governor B 330 R

Setting of low idle:

$n = 250 = 5.5-11.5 \text{ cm}^3/1000 \text{ strokes (approx. 7 mm CRT)}$

Scatter max.  $1.0 \text{ cm}^3$ ; given greater scatter, adjust initial tension of valve spring accordingly (Section A, Column 6)

High idle:

$n = 1070 = 9.5 - 14.5 \text{ cm}^3/1000 \text{ strokes (approx. 7 mm CRT)}$

Scatter max.  $3.0 \text{ cm}^3$

Testing of shutoff device:

With the pump off and at  $n = 60$  or  $n = 980$  it must be possible to move the control rod with the stop lever from the starting and full-load position to CRT 0 (Stop).

**Testoil-ISO 4113**

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

En

PE 4 A 90 C 412 RS 2165

EP/RSV 200-1000 A1 B454 DL

supersedes

EP/RSV 200-1200 A1 B455 DL

company Renault

Values apply to fuel-injection test tubing

engine 124 V

1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	7,4 - 7,9	0,4			
	6 15	2,9 - 3,7 16,0 - 17,3				
200	6	1,1 - 2,0				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

..A1 B 454 DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.47	1010	16,0	without auxiliary spring	ca.16	200	6,0	990	0		
	1030	12,2								
	1050	7,0								
	1040	7,5-11,0	with auxiliary spring							
	1100	2,6- 4,0								
	1200	0 - 1								
2a										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	72,0-74,0	1020		800 500	78,5-81,5 73,5-76,5	1030	1,9-3,9	200	6,0
									./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

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E9

E9

The numbers denote the sequence of the tests

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control					
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm				
1	2	3	4	5	6	7	8	9	10	11				
ca. 72	1220	12,0	without auxiliary spring			ca. 29	200	6,0	1200	0				
	1250	9,3					100	19 - 21	900	0,7-0,9				
	1280	6,3							200	5,7-6,3	500	1,1-1,3		
	1250	8,6-10,0											450	1,3-3,8
	1320	3,0- 4,5												
2a	1450	0 - 1	with auxiliary spring											

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ) rev/min							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1200	73,0-75,0	1020	1000 800 500	71,5-74,5 78,0-82,0 73,0-77,0	100 200 1250	12,9-13,9 1,6- 2,2 2,4- 4,4	200	6,0	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 19.8.65

En

PE 2 A 85 C 320/3 RS 2152  
PE 3 A 85 C 320/3 RS 2146  
PE 4 A 85 C 420/3 RS 2152

EP/RSV 250-750 A1 B438R

supersedes  
company  
engine

Vendeuvre  
Z 2 P 56  
Z 3 P 66  
Z 4 P 76

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	9	4,6 - 5,3	0,4			
	6	2,0 - 2,8				
	15	11,6 - 12,7				
200	6	1,7 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 36	750	16	without auxiliary spring			ca. 17	250	6	730	0
	770	12					100	19 - 21	400	0
	800	5,2					250	5,7-6,3	300	1,2-1,8
	780	8,6-10,6	with auxiliary spring				350	2,2-3,6		
	800	3,8- 6,6					450	0 - 1		
	830	1,8- 3,2								
2a	900	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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## B. Governor Settings

[illegible]

Torque control travel a mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104 F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel		
(2)		(2b)	(5a)		(6)	(5)		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
Z 2 P 56 PE 2 A ...	S 2152							
730 67,0-69,0	760 - 770	-	-	100	mind.20mmRW	250	6	
Z 3 P 66 PE 3 A ...	S 2146							
730 73,5-75,5	760 - 770	-	-	100	mind.20mmRW	250	6	
Z 4 P 76 PE 4 A ...	S 2152							
730 73,5-75,5	760 - 770	-	-	100	mind.20mmRW	250	6	

### Checking values in brackets

\* 1 mm less control rod travel than col 2

## B. Governor Settings

[illegible]

Torque control travel a =                      mm

### C. Settings for Fuel Injection Pump with Fitted Governor

[illegible]

### Checking values in brackets

\* 1 mm less control rod travel than col 2

**En**

# Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 1.10.64

En

PE 6 A 90 C 410 RS 2023

EP/RSV 250-1100 A1 B 173 D

supersedes

company

Lancia-Italien

engine

516,00

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1

mm (from BDC)

Tappet clearance at TDC min. 0.2 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	15	13,5-14,3	0,5			
1000	6	2,3- 3,1				
	9	6,1- 6,8				
200	9	3,6- 4,2				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 57	1100	16	without auxiliary spring			ca. 23	250	7,5	1080	0
	1140	11,4					100	19 - 21	1000	0,2-0,4
	1170	7					250	7,2-7,8	800	0,9-1,1
	1160	6,2-10					300	6,4-7	600	1,35-1,65
	1200	3,2-5,3					440	1,4-4,6	350	1,35-1,65
②a	1230	1,0-3,8	with auxiliary spring				600	0 - 1		
	1320	0,3-1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery <b>(5)</b>		<b>(4a)</b> Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	
1080	103,5-105,5	1110-1120	800 500	112,5-115,5 115,0-119,0					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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E13

E13

As opposed to VDT-WPP 001/4 - first supplement - the special setting is as follows:

- |   |                        |             |
|---|------------------------|-------------|
| 1. Governor-spring adjustment   | corresponds to         | (1)         |
| 2. Pre-adjustment of full-load delivery and noting down of control-rod travel                         | roughly corresponds to | (2)         |
| 3. Screw in torque-control retainer until control-rod travel is 1 mm more than that measured under 2. | roughly corresponds to | (3)         |
| 4. Final adjustment of full-load delivery by screwing back full-load stop screw                       | roughly corresponds to | (2)         |
| 5. Adjustment of breakaway  | corresponds to         | (6)         |
| 6. Testing of torque control and fuel-delivery characteristics  | roughly corresponds to | (3)<br>(3a) |
| 7. Idle adjustment  | corresponds to         | (4)         |
| 8. Testing high idle<br>Test starting fuel delivery and adjust with control-rod stop                  | corresponds to         | (6a)        |

Please consult test instructions as regards information given in parentheses.

En



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 20.2.68

En

PE 6 A 90 C 410 RS 2125  
S 2229

EP/RSV 250-1100 A 1 B 205 DL  
250-1150\*

supersedes 23.6.64  
company Lancia  
engine 516 000  
\* 402 000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

End of pump delivery

Port closing at prestroke 4,4+0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,5				
	6	2,0 - 3,0				
	12	9,5 - 10,5				
200	9	3,0 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

250 - 1100 A 1 B 205 DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1100	16	without auxiliary spring			ca. 25	250	6,0	1000	0
	1140	12,2					100	19 - 21	800	0,4 - 0,6
	1180	7					250	5,7-6,3	600	0,6-0,8
	1170	6,0-9,8	with auxiliary spring				330	3,5-4,7	350	0,6-0,8
	1240	1,0-3,8					450	0 - 2,9		
	1340	0,3-1,0					550	0 - 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9	
1	2								
1080	113,5-116,5	1110-1180	800 500	113,0-117,0 112,0-116,0	100	15 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

**The numbers denote the sequence of the tests**

## B. Governor Settings

250-1150 A 1 B 205 DL\*

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.63	1150	16,0	without auxiliary spring			ca.25	250	6,0	1130	0
	1200	10,8								
	1240	5,6								
	1200 9,5-11,8		with auxiliary spring				100	19 - 21	700	
1250 3,6- 5,8		250				5,7-6,3	350	0,6-0,8		
1360 0 - 1		350				3,5-4,8				
2						450	0 - 3			
						560	0 - 1			

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop Test oil temp. 40°C (104°F)		<b>(6)</b> Rotational-speed limitat Note: changed to ...) rev/min		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery Idle <b>(5)</b>		<b>(4a)</b> Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	cm³/1000 strokes 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
1130	101,5-104,5	1170	800 500	104 - 108 97 - 101	100	15 mm RW			

### Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =                      rev/min      decreasing      increasing      pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure =                  bar	Gauge pressure =                  bar	mm                  (1)

**Notes:**

(i) when  $n =$

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

**En**

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 13.5.71

En

PES 6 A 75 C 320 RS1262  
PES 6 A 75 C 320 RS1263

EP/RSV 350-750 A7B589R (1) supersedes  
EP/RSV 350-1500 A2B589R (2) company  
engine

Saviem  
597.50

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

S1263:

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

\*\*

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,7 - 5,1	0,3			
	6	1,9 - 2,6				
	15	10,4 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

(1)

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			③ Torque control Control rod travel rev/min mm 10 11	
ca. 41	750	16,0	without auxiliary spring			ca. 21	350	5,4	730	0
	770	8,8					120	19 - 21	450	0
	780	4,6	with auxiliary spring				350	5,1-5,7		
②a	770	7,0-10,3					400	2,0-3,6	375	0,7-1,3
	800	3,6-4,7					460	0 - 1		
	870	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note changed to ) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ ④a Idle stop rev/min 8		Control rod travel mm 9
730	54,0-56,0	760	500	51,5 - 54,5	100	mind.20	350	7,5-11,5		
** Port closing difference between control-rod travel 9 mm and 21 = 4.5-5.5°camshaft.										
./.										

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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E17

The numbers denote the sequence of the tests

## B. Governor Settings

(2)

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control					
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm				
1	2	3	4	5	6	7	8	9	10	11				
ca. 52	1500	16,0	without auxiliary spring			ca. 16	350	5,1	1480	0				
	1550	9,9					120	19 - 21						
	1590	4,5									350	4,8-5,4		
	1560	8,5-9,8											450	1,0-2,9
1720			0 - 1	400	0,7-1,3									
2a		with auxiliary spring												

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Full-load stop Test oil temp. 40°C (104°F)		<b>6</b> Rotational-speed limitat. Note: changed to ... ) rev/min		<b>3a</b> Fuel delivery characteristics		Starting fuel delivery Idle <b>5</b>		<b>4a</b> Idle stop	
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1480 (2)	55,5-57,5	1520	800	49,5-52,5	100	mind.20	350	7,5-9,5	

### Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure – in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

**Notes:**

(1) when  $n =$

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

En

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 3.71

En

PES 3 A 85 C 310 RS 1232 EP/RSV 250-1000 A1 B12L

PES 4 A 85 C 410 RS 1232 EP/RSV 250-1000 A1 B1024L ./.

supersedes

company

engine

Lamborghini

FL 1153

FL 1154

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

\*\*

Port closing at prestroke 3,7+0,05 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,8 - 6,3	0,4			
200	6	2,3 - 3,5				
	9	3,3 - 4,3				
** Port closing difference between control rod travel 10.2 mm and 21 = 4.5-6° camshaft.						

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

250-1000 A1 B12L

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 55	1000	16,0	without auxiliary spring			ca. 25	250	6,0	980	0
	1060	10,5					100	19 - 21	400	0
	1100	5,7					250	5,7-6,3	300	1,2-1,8
2a	1100	3,5-7,8	with auxiliary spring				300	3,7-4,8		
	1150	0,5-3,2					450	0 -1,0		
	1250	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	78,5-80,5	1020							
									./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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The numbers denote the sequence of the tests

250-1000 A1 B1024L

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca. 55	1000	16,0	without auxiliary spring			ca. 25	250	6,0	1000	0		
	1050	10,7					100	19 - 21			450	0
	1100	6,0										
	1070	8,0-11,0	with auxiliary spring									
	1120	2,5- 5,5										
	1220	0 - 1										
②a												

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	68,5-70,5	1020							

Checking values in brackets

\* 1 mm less control rod travel than col 2

**D. Adjustment Test for Manifold Pressure Compensator**Test at n =  $\frac{\text{rev/min}}{\text{decreasing pressure - in bar gauge pressure}}$   
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar ( = maximum full-load control rod travel)

En

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 10.73

En

PES 3 A 65 C 410 RS 1185 EP/RSV 250-750 A7B555  
PES 4 A 65 C 410 RS 1247 EP/RSV 250-900 A7B555  
PES 6 A 65 C 410 RS 1253 EP/RSV 250-1500A8B555  
EP/RSV 250-1800A0B..

supersedes 6.70  
company Hanomag  
engine D 132 HG 1-3  
D 142 HG 4-6  
D 162 HG 7-9

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	4,3 - 4,7	0,4			
	9	2,0 - 2,6				
	18	8,2 - 9,1				
200	9	1,4 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

250-750

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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ca. 47	750	16,0	*			ca. 22	250	6,0	730	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	780	11,6					100	19 - 21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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250-900

ca. 60	900 16,0 940 11,4 970 6,8 940 10 - 12 1000 2,0-4,2 1100 0,3-1,0		ca. 25	250 6,0 100 19 - 21 250 5,7-6,3 320 2,6-4,2 450 0 - 1	880 0
		* without auxiliary spring			
		** with auxiliary spring			

Testoil-ISO 4113

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E21

674

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
250-1500 ca. 73	1500 1550 1590 1530 1600 1720	16,0 9,6 4,7 11,4-13,4 3,0- 5,0 0,3- 1,0	without auxiliary spring with auxiliary spring			ca. 20	250 150 250 350 520	6,0 19 - 21 5,7-6,3 3,0-4,3 0 - 1	1480 300	0 1,2-1,8
						(3a)				

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
880	57,0 - 59,0	910						D132HG
1480	57,0 - 59,0	1520					1	1500-1800
1780		1820					2	2400-3000
							3	3600
880	57,0 - 59,0	910						D142HG
							4	1500-1800
1480	57,0 - 59,0	1520					5	2400-3000
1780		1820					6	3600
880	57,0 - 59,0	910						D162HG
1480	57,0 - 59,0	1520					7	1500-1800
1780		1820					8	2400-3000
							9	3600

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113



②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4

En

PE 4 A 80 B 410 S 311  
C 410 RS1085

RQ 250/1125 A 242 d  
AA 242 D  
EP/RSV 250-750 A7B310  
200-925 A1 B293

supersedes  
company  
engine

Steyr  
WD 413 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5				
	6	1,2 - 2,0				
	15	10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications Control rod travel mm 9	rev/min 10	rev/min 11	Control rod travel mm 12
1000	14,3-15,1	1000	14,7	1125 1140 1160 1180 1240	14,2-14,7 10 -14,7 5 -12 0 -8 0	530	0	150 250 300 350 430	6,4-8,1 4,2-6,6 3,8-5,4 1 -3,5 0	400 600 800	16 - 17 15,4-15,8 14,8-15

Torque-control travel  
on flyweight assembly dimension a =  $0,4$  mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1000	71,0-73,0	C, col.7	500 800 1100	71,0-74,0 70,5-73,5 mind.70,5	100	10,4 - 11,4

Checking values in brackets

1.12.71

Testoil-ISO 4113

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E23

E23

**B. Governor Settings**

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca .54	750	16,0	*			ca .25	250	6	880	0		
	790	11,8					100	19 - 21				
	830	6,4									11,5-21	
	800	9,2-11,4										5,7-6,3
	820	5,7- 9,4										
950	0,3- 1,0	0 - 1										
2a				**					290	1,2-1,8		

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop
Test oil temp. 40°C (104°F)		Note: changed to ...)						Control rod travel mm
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	9
1	2	3	4	5	6	7	8	
750	73,5 - 75,5	770					250	6

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

200-925 A1 B293

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control				
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm			
1	2	3	4	5	6	7	8	9	10	11			
ca. 59	925	16,0	* without auxiliary spring			ca. 29	200	6,0	900	0			
	1000	11,3					100	19 - 21					
	1080	4,2									200	5,7-6,3	
													300
②a	1000	10 - 12	** with auxiliary spring			430			0 - 1	400			
	1100	1,5-2,7											
	1220	0 - 1					350	1,2-1,8					

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop
Test oil temp. 40°C (104°F)		Note: changed to ...)						Control rod travel mm
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	9
1	2	3	4	5	6	7	8	
925	78,5-80,5	940			100	10,4-11,4 (16,4-17,0 mmRW)		

Checking values in brackets

\* 1 mm less control rod travel than col 2

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4

Edition 22.11.68

En

PE 6 A 85 <sup>B</sup> 410/3 RS 2019 RQ 250/1200 A 411 d  
C (RV 5818) AA (AV 5859d)

supersedes  
company FBW  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,65 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5	0,4			
	6	1,3 - 2,1				
	15	12,3 - 13,1				
200	9	3,9 - 4,4				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10 rev/min 9		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4				Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12
600	15,7-16,3	600	16,0	1200	14,4-14,9	560	0	200	5,7-8,1	750	1,60
				1220	10,5-14,7			250	4,8-7,1	900	15,6-15,9
				1250	4,0-11,0			300	3,5-6,0	1050	15,2-15,5
				1300	0 - 4,8			400	0 - 2,8	1150	14,8-15,1
				1340	0			460	0		

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /-1000 strokes 2				cm <sup>3</sup> /-1000 strokes 5		Control rod travel mm 7
1180	60,5 - 62,5		500	-	-	-	-

Checking values in brackets

Testoil-ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PES 6 A 85 B 412 RS 461  
RS 2046

RQV 200/600-800/1100 AA474D

supersedes

company: MAN

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

1.5 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5				
	6	1,3 - 2,1				
	15	12,3 - 13,1				
200	9	3,9 - 4,4				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 62	850	14,8- 17				ca. 10	100	6,6- 8	880	0
	900	14,8- 15,2					200	4,2-6,5	700	0,4-0,6
	1000	15					300	3,6- 4	600	0,9-1,1
	1100	14,8-15,2					500	3,6- 4		
	1160	8 - 13					600	2,4- 4		
	1200	3 - 9					720	0		
	1290	0								

Torque control travel a = 1,0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1080	94,0-96,0	1110-1120	600 1100	95,5-98,5 93,5-96,5				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.11.63

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

En

PE 12 A 90 B 520 RS 466

RQV 200/750-1150 AA 502 D

supersedes

company:

K H D

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4				
	6	1,4 - 2,2				
	15	14,6 - 15,8				
200	9	3,9 - 4,9				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca .68	1150	15 - 18,2	ca .43	650	11,5-12,5	ca .10	100	6,3-8,0	1050	0
	1200	10 - 14,5		750	5,0-11		200	4,9-7,0	1000	0,4-0,6
	1250	4,5-10,7		800	2,0- 5,1		300	3,6-4,5	900	0,7-0,9
	1300	0 - 6,5		900	0 - 1,9		500	3,6-4,0	800	0,9-1,1
	1380	0		970	0		700	3,6-4,0		
							780	0		

Torque control travel a = 1,0 mm

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
10,5	1160-1170							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 BOR 5,0 g

Edition 8.64

En

PE 4 A 70 B 412 RS 474

RQ 250/1425 A 355 D

supersedes 20.7.60

company: Borgward

PE 4 A

A 356 D

engine D 6 M 5 II

D 4 M 3,3 II

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6	1,2 - 1,9				
	18	10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12	
1350	14,6-15,4	1350	15	1425	14,8- 15	510	0	100	6,4-8,1	450	16 -16,3
				1440	11,4- 15			150	5,8-7,9	700	15,7-16
				1460	5,6- 13			250	3,8- 6	800	15,4-15,7
				1480	0 - 10			350	0,3-2,8	900	15 -15,3
				1550	0			410	0		

Torque-control travel  
on flyweight assembly dimension a = 0,3 mm

Speed regulation. At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2		Control rod travel mm 3a		cm <sup>3</sup> /1000 strokes 5		Control rod travel mm 7	
1400	53,0 - 55,0	400		1100	52,0 - 55,0	100	mind. 16mmRW
				700	54,5 - 57,5		
				400	50,0 - 54,0		

Checking values in brackets

F4

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PE 6 A 75 B 410/3 LS 479 EP/RSV 300-900 A7A 372 d

supersedes  
company M W M  
engine

Cam sequence and angular spacing:

1 - 2 - 3 - 5 - 4 6

45 - 75 - 45 - 75 - 45 - 75

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,2 - 3,7	0,2			
	6 15	0,9 - 1,7 8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees rev/min 7 8		③ Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9			
ca. 62	900 16 940 11,6 970 7,4		without auxiliary spring			ca. 29	300 7,5	880 0 700 0 600 0,5-0,7 500 0,9-1,1 350 1,0-1,2	
②a	960 7 - 10,4 1000 3 - 6 1040 1,2-4 1150 0,3-1						100 19 - 21 300 7,2-7,8 400 4,6-5,9 500 0 - 3,9 650 0 - 1		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note changed to ) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ Idle stop Control rod travel mm rev/min 8	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7			
10,5	910 - 920								

Checking values in brackets

\* 1 mm less control rod travel than col 2

23.9.63

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F5

# Test Specifications

## Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PE A 85 B 320 LS 496

EP/RSV 400-1900 A 0 A 101

supersedes

company

Krupp

engine

Tappet clearance at TDC min. 0,3+0,05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	3,8 - 4,3	0,3			
	6	0,5 - 1,2				
	12	6,4 - 7,4				
200	9	1,1 - 1,9				
	21	10,6 - 12,9				

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

### B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1900	16	without auxiliary spring			ca. 21	400	6	1880	0
	1980	12,2					200	19 - 21	1700	0
	2080	6,1					400	5,8-6,2	480	1,2-1,8
2a	1900	15,7-16,2	with auxiliary spring				500	3,7-4,9		
	2000	10 - 12					600	0,8-3,2		
	2080	3,8- 8					750	0 - 1		
	2300	0,3- 1								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9	
1	2								
1880	92,0 - 94,0				100	RW 21			

Checking values in brackets

\* 1 mm less control rod travel than col 2

21.8.61

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# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

WPP 001/4

En

PE 6 A 75 B 321 RS 498 EP/RSV 250-1425 A 2 A 104  
with altitude stop

supersedes  
company Perkins  
engine B 340

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,25 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	0	4,7-5,1	0,4			
	6	1,9 - 2,6				
	15	10,4 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

<b>(1)</b> Upper rated speed rev/min			Intermediate rated speed			<b>(4)</b> Lower rated speed			<b>(3)</b> Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 60	1425	16	without auxiliary spring			ca. 22	250	6	1400	0
	1520	9,8					150	19 - 21	500	0
	1590	4	with auxiliary spring				250	5,8- 6,2	310	1,2 - 1,8
<b>(2a)</b>	1500	9,8- 12					400	1,1- 3,4		
	1600	2,5- 5,3					450	0 - 2,4		
	1660	0 - 2,8					550	0 - 1		
	1730	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery		<b>(4a)</b> Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	54,5 - 56,5	without altitude stop							
1400	52,5 - 54,5			with altitude stop					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4

En

PES 4 A 85 B 410 RS 503

RQ 250/1200 A 387 d

supersedes

company: Saurer-A

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,6				
	6	0,1 - 0,8				
	15	11,4 - 12,6				
200	9	3,1 - 4,7				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16	1200	14,1-14,3	490	0	100	5,4-7,4	700	15,8-16,0
				1220	14,0-14,2			200	3,9-6,1	800	15,4-15,8
				1240	10,0-14,0			300	1 - 3,6	900	15,0-15,4
				1340	0 - 8,4			390	0	1000	14,6-15,0

Torque-control travel  
on flyweight assembly dimension a = 0,55 mm

Speed regulation. At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1180	65,5 - 67,5	500		800	57,5 - 60,5	100	mind. 13 mm RW
				500	51,5 - 54,5		Idle 6 mm RW

Checking values in brackets

26.7.63

# Test Specifications Fuel Injection Pumps ② and Governors

HAN 2,8 a5

En

PE 4 A 65 B 310 LS 531  
1002  
546

RQ 300/1400 A 384 d  
399 d  
384

supersedes Hanomag  
company D 28 KL  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,3 + 0,1

RW 9

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,7 - 6,2	0,3			
	6	1,4 - 2,1				
200	6	0,8 - 1,6				
	21	7,6 - 8,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
1350	13,8-14,4	1350	14,1	1400 1420 1450 1470 1530	13,8-14,1 10 -13,8 2,5 -10 0 -7,8 0	300	0	250 300 350 400	6 - 8,1 3,8-6,4	600 800 1000 1200	15,5-15,9 13 -13,4 14,4-14,9 14,1-14,4

Torque-control travel  
on flyweight assembly dimension a = 0,6 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm <sup>3</sup> /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm <sup>3</sup> /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm <sup>3</sup> /1000 strokes/mm 7	
1380	44,0 - 46,0	750		750 500	45,0 - 48,0 44,5 - 47,5	100	mind. ~ 20 mmRW

Checking values in brackets

15,2.62

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②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 HAN

Edition 6.66

En

PE 4 A 65 B 310 LS 1002

RQ 300/1400 A 441 D

supersedes 10.64  
company Hanomag  
engine D 28 KL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,3+0,1

mm (from BDC)

RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,7 - 6,2	0,3			
	6	1,4 - 2,1				
200	6	0,8 - 1,6				
	21	7,6 - 8,9				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
PRG check		Setting point		Test specifications		Setting point		Test specifications		Torque control	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1350	14,4-15	1350	14,7	1400 1410 1440 1460 1520	14,4-14,7 11,8-14,6 4 -12 0 -8,4 0	500	0	200 300	7,2-8,1 3,6-6,0	450 800 1000 1200	16 -16,2 15,8-16 15,2-15,6 14,7-15

Torque-control travel  
on flyweight assembly dimension a = 0,4

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1380	43,5 - 45,5	750		750 500	44,0 - 47,0 42,0 - 45,0	100	mind. 20mmRW

Checking values in brackets

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 HAN2,8a6

Edition 10.64

En

PE 4 A 65 B 310 LS 531

EP/RSV 300-600-1400 A5A131D

supersedes 19.1.62

company Hanomag

engine D 28 KL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,3 + 0,1

mm (from BDC)

RW 9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	5,7 - 6,2	0,3			
	6	1,4 - 2,1				
	6	0,8 - 1,6				
200	21	7,6 - 8,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	1400	16	without auxiliary spring			ca. 22	300	6	1380	0
	1450	12,2					100	19 - 21	1000	0,3-0,5
	1500	7,6					300	5,7-6,3	700	0,8-1,0
	1480	8 - 11	with auxiliary spring				400	5 - 6	400	1,1-1,3
	1500	5 - 9					500	1,5-3,7		
	1600	0,6-3,3					700	0 - 1		
	1700	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1380	43,5-45,5	1410-1430		750	44,5 - 47,5	100	20 mm RW		
				500	44,0 - 47,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1A and Governors

**40**  
VDT-WPP 001/4 HAN 2,1 h  
Edition 10.64

En

PE 3 A 65 B 410 LS 1039 EP/RSV 250-1150 A 1 A 156 D

supersedes 13.4.62  
company Hanomag  
engine D 21 CR 336

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,3 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,7 - 6,2	0,3			
	6	1,4 - 2,1				
	18	9,7 - 10,6				
200	6	0,8 - 1,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3						Control rod travel mm 9			
ca. 65	1150 12		without auxiliary spring			ca. 28	250 6		1130 0	
	1180 9						100 19 - 21		1000 0,5-0,7	
	1210 5,5		with auxiliary spring				250 5,7-6,3		800 1,2-1,4	
	1180 8 - 10						350 3,3-5		300 1,2-1,4	
	1220 3,6- 6						450 0 - 3			
	1350 0 - 1						600 0 - 1			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 8 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7			
1130	42,0-44,0	1160-1180	750	47,5 - 50,5					
			500	46,5 - 49,5					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4 MB 1,7 i 4

Edition 11.68

En

PES 4 A 50 C 410 RS 1010

EP/RSV 250-1625 A 2 B 60

(V 6841)

A 2 B 433 L\*

supersedes 2.64

company (DAI 1,7 i 4)

engine OM 636

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,2 - 2,7	0,2			
	9	0,8 - 1,4				
	18	4,5 - 5,2				
200	9	0,6 - 1,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 torque control Control rod travel rev/min mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		10	11
ca. 68	1625 12 1680 7,8 1720 4,8		without auxiliary spring			ca. 24	250 6		1600 0	
							100 19 - 21 250 5,7-6,3 350 3 -4,5 450 0 -2,5 550 0 -1		500 0 300 1,2-1,8	
2a	1680 7 - 8,5 1700 5 - 7,2 1750 2,4- 4 1900 0 - 1		with auxiliary spring							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
1600	30,7-31,7		1630-1650	1000	27,7 - 29,7				
1600	28,2-29,2								

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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①

# Test Specifications

## Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 1,8 d 1

Edition 2.64

En

PES 4 A 50 B 410 RS 50

EP/RSV 250 - 775 A 4 A 60

S 1010

B 60

supersedes

1.5.61

company.

Daimler-Benz

engine.

OM 636 VI-E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

1,7 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,2 - 2,7	0,3			
200	9	0,8 - 1,4				
	18	4,5 - 5,2				
	9	0,6 - 1,1				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 44	775	16	without auxiliary spring			ca. 21	250	6	750	0
	815	10					100	13 - 21	400	0
	835	6					250	5,7-6,3	300	1,2-1,8
	820	7,2-10,2					300	4 - 5		
	850	3 - 5	with auxiliary spring				350	1 - 3,5		
	880	1,2-2,9					450	0 - 1		
	950	0 - 1								

Torque control travel a = mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
750	28,2-29,2	780 - 790						

Checking values in brackets

\* 1 mm less control rod travel than col. 2



②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 KRU 7,2g

Edition 2.64

En

PE 5 A 85 B 320 LS 553

RQ 400/1900 A 407 D

supersedes 6.10.61

company: Krupp

engine: D 573

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

4,8 - 0,1

mm (from BDC)

RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,5 - 4,9	0,4			
	6	2,2 - 3,0				
	12	8,9 - 9,5				
200	9	2,6 - 3,4				
	21	14,9 - 17,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1850	13,8-14,6	1850	14,2	1900	14 - 14,2	730	0	300	6,1-8,1	700	15,6-16,1
				1920	10 - 14,2			400	4,4-6,5	900	15,2-15,6
				1940	5,4-13			500	1,8-4,2	1100	14,8-15,2
				1980	0 - 8,2			630	0	1300	14,2-14,6
				2050	0						

Torque-control travel  
on flyweight assembly dimension a =

0,55

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1850	91,5 - 92,5	1200	1200	87,5 - 89,5		
			1500	89,0 - 91,0		
			1900	mind. 91,5		

Checking values in brackets

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 12.65

En

PE 4 A 60 C 310 LS 1064

RQV 250-1000 AA 970

supersedes

company

Hanomag

engine

D 28 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,1 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	4,5 - 5,0	0,3			
	6	0,6 - 1,2				
	18	8,3 - 9,1				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
66±1,5	1020 1040 1080 1140 1210	15 - 18 12,4-16,2 7,6-12,8 0 - 7,2 0	-	-	-	10±1,5	150 250 450 550 680	6,2-8 4,7-7 2,8-3,8 1,2-2,5 0	1000 850 650 500	0 0,1-0,3 0,3-0,5 0,4-0,6

Torque control travel a = 0,5 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min cm <sup>3</sup> /1000 strokes		Rotational-speed limitation intermediate speed rev/min cm <sup>3</sup> /1000 strokes		Fuel delivery characteristics high idle speed rev/min cm <sup>3</sup> /1000 strokes		Starting fuel delivery Idle switching point rev/min cm <sup>3</sup> /1000 strokes		Torque-control travel rev/min mm	
1	2	3	4	5	6	7	8	9	
1000	38,5-40,5	1010-1030	750 450	39,5 - 42,5 38,0 - 41,0					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 12.65

En

PE 4 A 75 C 420 RS 1063

RQV 250-825 AB 78R

supersedes

company

engine

Hanomag

D 57 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9	2,8 - 3,4	0,4			
	6	0,6 - 1,1				
	15	8,3 - 9,3				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
65±1,5	825 840 880 920 960	14,8-17,4 12 -15,4 5 -10,2 0 - 5,4 0	-	-	-	10±1,5	100 200 300 400 580	7,4-8 6 -8 3,6-4,8 2,2-3,8 0		
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
650	93 - 95	830 - 840						

Checking values in brackets

\* 1 mm: less control rod travel than col. 2

①

# Test Specifications Fuel Injection Pumps ① and Governors

En

PE 6 A 65 B 412 RS 1059

RQV 250/600-900/1275 AA  
472 D

supersedes

company

engine

M A N

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2	0,3			
	6	1,1 - 1,8				
	15	5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
62±1,5	950 1000 1250 1300 1400 1500	17,6-23 14,8-15,8 14,8-15,2 12,8-15,2 3,6-9 0				10±1,5	100 200 400 600 700 760	7 - 8 5,5-7,6 3,6-4 2 -4 0,3-1,8 0	900 750 600	0 0,3-0,5 0,7-0,9

Torque control travel a = 0,8 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥	Torque-control travel ⑤ Control rod travel mm		
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.6.63

F20

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①

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

WPP 001/4

En

PE 6 A 65 B 412 RS 1059

RQV 250/600-900/1350 AA  
472 D

supersedes

company M A N

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2	0,3			
	6	1,1 - 1,8				
	12	5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
62±1,5	950 1000 1300 1380 1460 1550	17,8-23 14,8-15,4 14,8-15,2 12 -15,2 2,5 - 8,6 0				10±1,5	100 200 400 600 700 770	6,4-8 5,5-7,6 3,6-4 2 -4 0,2-2 0	900 750 600	0 0,4-0,6 0,7-0,9

Torque control travel a = 0,8 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)		Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel Control rod travel mm (5)	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.6.63

Testoil-ISO 4113

# Test Specifications

## Fuel Injection Pumps **(1A)**

### and Governors

**40**

VDT-WPP 001/4  
Edition 1.12.65

En

PES 4 A 70 B 120 RS 168 EP/RSV 300-1050 A1 A11  
PES 4 A 70 C 320/3 RS 1056 EP/RSV 300-1050 A1 B11

supersedes  
company Hürlimann  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	3,8 - 4,3	0,3			
	6	1,2 - 2,3				
	12	6,5 - 7,0				
200	6	0,5 - 1,3				

Adjust the fuel delivery from each outlet according to the values in   
\*\*

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
	2	3	4	5	6	7	8	9	10	11
ca.	1050	16	without auxiliary spring			ca. 25	300	6	1030	0
	1100	10,3					100	19 - 21	500	0
	1130	6	with auxiliary spring				300	5,7-6,3	340	1,2 - 1,8
	1100	8,4 - 12					350	3,6-4,5		
	1150	2,4 - 5,8					400	0,4-2,8		
	1200	0,3 - 2,2					450	0 - 1		
2a	1250	0,3 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle		Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2		4			6	7	8	9
1030	41,75-43,75	1060-1080	100	mind.		100	mind. 20 mm RW		
** Port closing difference between control-rod travel 9 mm and 21 = 8° ± 0,5° camshaft.									

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PES 3 A 70 C 320 RS 1045 EP/RSV 250-1050 A1B 314

supersedes

company:

Valmet

engine

310 D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6	1,2 - 1,9				
	18	10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed			Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	①a	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm
1	2	3	②a	4	5	6		7	8	9		10	11
ca. 58	1090	16						ca. 25	250	6		1030	0
	1100	11		without	auxiliary				100	19 - 21		420	0
	1160	4		spring					250	5,7-6,3		300	1,2-1,8
	1100	10 - 12,3							300	4 - 5			
	1150	3 - 7		with auxiliary					350	1 - 3,5			
	1200	0 - 3		spring					450	0 - 1			
	1250	0 - 1						③a					

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1030	48,0 - 50,0	1060-1080	-	-			n 250	RW 6

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 KHD 5,3 z 4

Edition 7.74

En

PE 4 A 75 C 420 LS1036

EP/RSV 300-1000 A7B261DR

supersedes

K H D

PE 6 A 75 C 420 LS1036

EP/RSV 300-1000 A73261DR

company

F 4

engine

F 6 L 514 F

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,3			
	9	3,0 - 3,7				
	15	8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

EP/RSV 300-1000 A7 B261D

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm	
2	Control rod travel mm	Control rod travel mm rev/min	4	5	6	8	9	10	11	
ca. 72	1000	16,0	without auxiliary spring			ca. 28	300	6,0	PE 4	A:
	1040	11,0					100	19 - 21	400	1,0-1,2
	1020	6,4					300	5,7-6,3		
	1050	8,0-10,6	with auxiliary spring				420	2,2-4,0	PE 6	A:
	1100	1,8- 4,0					550	0 - 1	400	1,5-1,7
	1200	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to 1 rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
PE 4 A:									
980	80,0-82,0 (79,0-83,0)	1010		750	81,0-84,0 81,0-84,0 (80,0-85,0)				
PE 6 A:				750	86,0-89,0 (85,0-90,0)				
980	77,0-79,0 (76,0-80,0)			500	86,5-89,0 (85,5-90,5)				

Checking values in brackets ± 1,0

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4

Edition 5.69

En

PE 6 A 75 C 320 RS 1035 Z RQ 250/1150 AA 239 D

Cam sequence and angular spacing:

1 - 6 - 4 - 2 - 5 - 3  
0 -30 -90 -150-240-300°

supersedes

company: K H D

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,3			
	9	3,0 - 3,7				
	15	8,5 - 9,3				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 10		Control rod travel mm 12	
500	15,6-16,4	500	16	1150	13,2-13,8	420	0	200	6,4-8,2	400	16-16,2
				1160	8,4-13,6			250	3,6-6,2	700	15,0-16
				1200	0 - 6,5			300	0 -2,4	900	14,7-15,2
				1230	0			320	0	1100	13,6-14,0

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7	Control rod travel mm
1150	68,5 - 70,5	500		1000	72,0 - 75,0		
				600	77,0 - 80,0		
				400	74,5 - 78,5		

Checking values in brackets

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4

Edition 23.3.65

En

PES 6 A 75 C 380 RS 1035

RQ 250/1075 AA 151 DR

supersedes

company:

KDA

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,3			
	9	3,0 - 3,7				
	18	8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications Control rod travel mm 5		Control rod travel mm 8		Test specifications Control rod travel mm 10		Control rod travel mm 12	
1000	13,8-14,6	1000	14,2	1075	14-14,2	440	0	380	0	400	15,7-16,2
				1100	10,5-14			300	0 - 2	500	15,4-15,8
				1140	4,5-10,5			250	3 -3,6	700	15 -15,4
				1180	0 - 7			200	5,5-8,1	900	14,3-14,7
				1340	0			150	7,3-8,1		

Torque-control travel  
on flyweight assembly dimension a = 0,35 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7	
1050	73,0 - 75,0	600		800	76,5 - 79,5		
				600	77,5 - 80,5		

Checking values in brackets

G2

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①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4  
Edition 9.12.71

En

PES 6 A 70 B 410 RS 1034 RQV 250-1000/1500 AA1960  
(V6699D)

supersedes  
company Daimler Benz  
engine OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6 15	1,2 - 1,9 11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

RQV .. AAV 7239

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1500	12,0-15,2	ca. 61	1000	12,0-14,8	ca. 10	100	6,6-8,0	1500	0
	1550	7,2-12,0		1100	5,4- 7,7		250	4,1-6,2		
	1600	2,0- 8,7		1350	5,1- 5,3		400	2,3-3,8		
	1730	0		1480	0		600	0,7-2,4		
							760	0	400	0,6-0,8

Torque control travel a = 0,7 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)	Torque-control travel (5)		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1000 →	49,5-51,5 <u>A496D!</u>	1520	500 700 1500	51,5-54,5 51,5-54,5 51,0-54,0			700	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications

## Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 21.10.64

En

PES 3 A 80 C 320/3 LS 1013 EP/RSV 300-750 A1B 218 DR

supersedes  
company MWM  
engine KDW 415Z u. D  
Fendt (tractors) F 40 U1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 42°	750	16	without auxiliary spring			ca. 25	300	6	730	0
	800	10,6					100	19 - 21	650	0,2-0,4
	825	7,4					300	5,7-6,3	550	0,5-0,7
	815	7 - 10	with auxiliary spring				425	1,9-3,8	450	0,7-0,9
	850	3,7-5,8					550	0 - 1	350	0,8-1,0
	900	0,9-3,4								
2a	1050	0,3-1								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
730	63,2-65,2	760-770	600	66,7-69,7					
			400	68,5-71,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

G4

G4

# Test Specifications

## Fuel Injection Pumps (1A)

### and Governors

40

WPP 001/4

En

PES 2 A 80 B 320/3 LS 1012  
PES 3 A 80 B 320/3 LS 1013

EP/RSV 300-800 A 1 A 122

supersedes  
company  
engine

MWM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7			Lower rated speed rev/min 8		3 Torque control rev/min 10		Control rod travel mm 11
2	Control rod travel mm	Control rod travel mm rev/min 3											
	800	16	without auxiliary spring			ca. 24			300	6	780	0	
	840	11,8							100	19 - 21	440	0	
	880	6,5							300	5,7-6,3	330	1,2 - 1,8	
2a	860	7,5-10,6	with auxiliary spring						360	2,8-4,2			
	900	2,7- 6							500	0 - 1			
	1000	0,5- 1											

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		Control rod travel mm 9
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7			
780	73,5 - 75,5	810 - 820								

Checking values in brackets

\* 1 mm less control rod travel than col 2

KDA 28,5.63

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G5

G5

# Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4  
Edition 29.9.65

En

PE 3 A 80 C 410 RS 1000 EP/RSV 200-925 A1 B165 D

supersedes  
company Steyr  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 \pm 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees rev/min 7 8 9			③ Torque control Control rod travel rev/min mm 10 11	
ca. 59	925	16	without auxiliary spring			ca. 30	200	6	900	0
	980	12,6					100	19 - 21	700	0,4-0,6
	1060	5,8					200	5,7-6,3	600	0,8-1,0
	1010	5,5-9,4	with auxiliary spring				400	1,4-3,8	400	1,0-1,2
	1120	0,5-3,0					600	0 - 1		
	1250	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to ) rev/min 3		③a Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm <sup>3</sup> /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
900	75,0-77,0	930	700 500	81,0 - 84,0 85,0 - 88,0		100	20mm RW		

Checking values in brackets

\* 1 mm less control rod travel than cu. 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4

En

PE 8 A 75 B 410/3 LS 537

EP/RSV 300-1250 A 2 A 385 D  
A 371 D

supersedes  
company  
engine

M W M

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,45 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,2-3,7				
	6 15	0,9-1,7 8,5-9,5				
200	9	1,9-2,8				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 51	1250	16	without auxiliary spring			ca. 22	300	6	980	0
	1320	11,2							800	0,7-0,9
	1380	6,2					600	1,3-1,5		
	1350	7 - 10	with auxiliary spring			150	19 - 21			
	1400	3,4-6,4				200	9 - 21			
	1470	0,5-3,2				300	5,7-6,3			
1550	0,3- 1	400				4,1-5				
②a						550	0,3-3,1			
						700	0 - 1			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ) rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	rev/min 5	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	56,5 - 58,5	1260-1270	800 500	58,0 - 61,0 57,0 - 60,0		100	min.9,9		

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4

En

PES 4 A 85 B 410 RS 499 RQ 250/1150 A 387 d  
/1200 A 387 d

supersedes

company:

Saurer

engine:

CO 1 D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,6	0,4			
	6	0,1 - 0,8				
	15	11,3 - 12,6				
200	9	3,1 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

250/1150

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
1100	14,2-15	1100	14,6	1170 1200 1220 1280	14,4-14,6 6 -13 0 -10 0			150 250 350 430	7,2-8,1 4,7-7 1,4-3,8 0	450 500 700 900	15,7-16,5 15,6-16 15,2-15,6 14,6-14,9

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3	Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2			cm <sup>3</sup> /1000 strokes 5		Control rod travel mm 7
1130	61,5 - 63,5	600	500 800	46,0 - 49,0 53,0 - 56,0		

Checking values in brackets

KDA 13.2.61

Testoil-ISO 4113



# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4

En

PES 3 A 65 B 320/3 RS 483

EP/RSV 300-1300 A 2 A 398 d  
(V 6845 d)

supersedes

company

engine

M W M

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,45 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	4,3 - 4,7				
	9	2,0 - 2,6				
	18	8,2 - 9,1				
200	9	1,4 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 49	1300	16	without auxiliary spring			ca. 18	300	6	1280	0
	1350	11,7					100	19 - 21	1200	0,3-0,5
	1400	4,7					200	10,4-21	1000	1,1-1,3
	1350	10,0-12,3	with auxiliary spring				300	3,7-6,3	450	1,6-1,8
	1380	7,2-10					500	1,5-3,6		
	1480	1 - 3,3					700	0 - 1		
2a	1600	0,3- 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 4a Idle stop	
Test oil temp 40°C (104 F)		Note changed to ) rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1280	38,0-40,0	1310-1320	900 500	39,5 - 42,5 37,5 - 40,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

KDA 6.9.63

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Testoil-ISO 4113

G9

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PES 6 A 80 B 412 RS 460

EP/RS 250/600-1250 A0 A380

MAN-Nr. 270

supersedes

company

M A N

engine

D 0836 M 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,5 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,3			
	6	1,2 - 2,0				
	15	9,8 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca .64	1250	12	ca .26	600	12	ca .16	250	6	1230	0
	1250	12 - 12,5		600	11,5 - 12		100	20 - 21	500	0
	1300	7,5 - 9		650	5,8 - 7,8		250	5,7 - 6,3	320	1,2 - 1,8
	1350	3,4 - 5,6		700	3 - 3,8		350	3,4 - 4,7		
	1400	1,4 - 3		800	0,4 - 2		450	0,4 - 3		
	1500	0 - 1		900	0 - 1		600	0 - 1		

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1230	71,0 - 73,0	1260-1280			100	20 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

KDA 16.2.62

G10

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# Test Specifications

## Fuel Injection Pumps ②

### and Governors

VDT-WPP MAN 5,9c

Edition 2.64

En

PE 6 A 65 B 412 RS 320 RQ-250/1250 A 261 D

supersedes 6.11.58  
 company: M A N  
 engine: D 0026 M 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2				
	6	1,1 - 1,8				
	12	5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
550	15,6-16,4	550	16	1250 1280 1300 1320 1380	14,5-14,8 7,8-13,2 3,8-11,2 0 - 8,6 0	540		100 200 300 400 440	6,5-8,1 5,3-7,3 2,9-5,3 0 -1,9 0	800 1000 1200	15,8-16 15,4-15,7 14,7-15

Torque-control travel  
on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control  
rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		Control rod travel mm 7
800	56,5 - 58,5	500		500 1230	53,5 - 55,5 52,5 - 54,5	100	mind. 9,9

Checking values in brackets

# Test Specifications

## Fuel Injection Pumps ②

### and Governors

En

PE 6 A 65 B 412 RS 320 RQ 250/1275 A 261 D  
MAN-Nr. 203 A 485 D

supersedes 1.2.61  
company M A N  
engine D 0026 M 1  
M 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC) RW 21

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2	0,3			
	6	1,1 - 1,8				
	12	5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ④				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16	1275 1300 1320 1340 1400	15,5-15,9 9 -14 4 -11 0 -8,5 0	540	0	100 200 250 350 440	6,3-8,1 5 - 7 4 - 6 1 -3,5 0	800 1000 1200	15,7- 16 15,2-15,6 14,7-15,1

Torque-control travel  
on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control  
rod travel

Testoil-ISO 4113

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/ Control rod travel mm 7
800	56,5 - 58,5	500	500 1250	53,0 - 55,0 53,0 - 55,0	100	mind. 9,9

Checking values in brackets

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 8,3

PE 6 A 85 B 412 RS 161

RQV 200 - 1000 A 209  
(1050)

supersedes

company:

engine:

MAN

D 1246 MT

MAN-Nr. 56

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

4,6 + 0,1

mm (from BDC)

RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	7,4 - 7,8				
	9 6	4,4 - 5,2 2,0 - 2,8				
200	6	0,2 - 0,9				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
66±1,5	1000	15 - 18	-	-	-	10±1,5	100	7 - 7,4		
	1020	12 - 16,2					200	4,2-6,8		
	1060	7 - 12,5					400	1,8-3,2		
	1120	0 - 6,8					500	0,6- 2		
	1200	0					630	0		

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	100 - 104			1055-1070				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

KDA 27.11.1957

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①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 HAN 9,3 b

En

PE 6 A 75 B 320 RS 165  
348  
1073

RQV 250...650 A 101 d  
286 d

supersedes  
company: Hanomag  
engine: Hannover-Linden  
D 93

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9	4,3 - 4,7	0,3			
	6 12	1,2 - 1,9 6,9 - 7,7				
200	9	3,2 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

\*\*

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
65±1,5	650 660 680 720 760	14 - 17,5 11,6-15,8 6,6-12,6 0 - 6 0	-	-	-	10±1,5	100 200 250 400 450	6,4-8,7 4,9-7,1 3,9-6 0,3-1,8 0	620 600 550 500	0 0 - 0,2 0,5-0,8 0,9-1,1
						③a				

Torque control travel a = 1,0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5b) (5a)		Starting fuel delivery idle switching point (6)	Torque-control travel (5)		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
640	76,0-77,0	655-670	500 400	82,0-84,0 79,0-82,0	100	ca. 19mm RW		
** Port closing difference between control-rod travel 12 mm and 21 = 7...8° camshaft.								

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
1.3.1955

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 6 A 70 B 410 RS 174 EP/RSV 250 - 900 A 1 A 363 d

supersedes  
company  
engine

Daimler Benz  
OM 321

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	2,8 - 3,1	0,3			
	12	4,9 - 5,6				
	18	8,9 - 9,7				
200	9	2,0 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 49	900	16	without auxiliary spring			ca. 23	250	6	880	0
	950	11,4					100	19 - 21		
	990	6					250	5,7-6,3		
2a	970	8 - 10,5	with auxiliary spring				350	3,4-4,6	600	0,5-0,7
	1000	3,8-8					400	1,5-3,8		
	1050	0,5-3,5					550	0 - 1		
	1150	0 - 1							300	0,9-1,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
900	53,0 - 55,0	910 - 920						n 250	RW 6

Checking values in brackets

\* 1 mm less control rod travel than col 2

KDA 18.5.60

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①

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

WPP 001/4

En

PE 12 A 75 B 520 RS 178 RQV 200 - 1050 A 447  
(V 6715)

supersedes  
company K H D  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,2 - 3,7	0,3			
	6	0,9 - 1,7				
	15	8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Testoil-ISO 4113

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
66±1,5	1050 1100 1150 1200 1260	15 - 18 9,5- 15 4 -9,5 0 - 5 0	-	-	-	10±1,5	200 300 400 500 680	6 - 8 3 -4,5 2,3-3,8 1,5-2,8 0		
						③a				

Torque control travel a = mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	71,0-73,0	1060-1080			100	21 mm		1000
1050	79,0-81,0	Fuel overquantity (with electromagnet)						

Checking values in brackets

\* 1 mm less control rod travel than col 2

KDA 28.3.62

G19

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# Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAI 10,8 g

Edition 3.64

En

PES 6 A 90 B 410 RS 283 RQ 250/1125 A 301 D

supersedes 1.5.61

company: Daimler Benz  
engine: OM 326/172 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC) RW 18

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 7,9				
	6	3,2 - 4,0				
	15	16,0 - 17,3				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
1050	14,6-15,4	1050	15	1125 1140 1160 1180 1240	14,6-15 11 -14,5 5 -12,5 0 - 9,5 0	530	0	100 200 250 350 430	6,8-8,1 5,4-7,6 4,2-6,6 1 -3,6 0	450 500 600	15,4-16,2 15,2-15,7 15 -15,1

Torque-control travel  
on flyweight assembly dimension a = 0,3 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm <sup>3</sup> /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm <sup>3</sup> /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm <sup>3</sup> /1000 strokes/mm 7	
700	96,0 - 98,0	500		500 1000 1100	94,0 - 97,0 98,0 - 102,0 98,0 - 102,0	100	mind. 14,4

Checking values in brackets

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4

En

PE 6 A 60 B 310 RS 252 EP/MZ 80 A 90  
S 482  
S1110  
V7527

supersedes  
company Perkins  
engine P 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	4,5 - 5,0	0,3			
	6	0,5 - 1,2				
	18	8,3 - 9,1				
200	6	0,3 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Torque control travel mm	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
-	500-480	10	500	11,4-12	500	4,9-5,1	550 600	7,1-10,4 3,3- 6,8		

control rod travel test (cols 4-11)  
= rotational speed 500 rev/min  
adjust breakaway (cols 4-5) by means of shims\*  
cam adjustment (B 8-9 - C 7-8) by means of shims\*\*

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm <sup>3</sup> /1000 strokes
rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	8
1	2	3	4	5	6	7		
750	0	44 - 46						

Checking values in brackets

7.4.70

# Test Specifications Fuel Injection Pumps ② and Governors

En

VDT-WPP 001/4  
1. Edition

PE 8 A 90 D 321/3 LS2437 RQ 250/1350AB881DR

Cam sequence and angular spacing:

1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je 45°

supersedes

company: Steyr

engine: WD 815.00

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,0 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	2,5 - 3,5				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 6		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
600		15,7-16,3		600		16,0		1370	14,6-15,0	530	0			150	7,0-8,1			800		15,8-16,0	
								1400	6,6-13,4					250	5,0-7,2			1000		15,3-15,7	
								1450	0 - 6,0					350	1,5-4,0			1100		15,0-15,2	
								1490	0					430	0						

Torque-control travel  
on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1390-1405

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1350	88,0 - 90,0	800		1000	96,0-99,0	100		ca. 15mm RW	
without	(87,0 - 91,0)				(95,0-100,0)				
1350	82,0 - 86,0			800	97,5-100,5				
with	(81,0 - 87,0)				(96,5-101,5)				

Checking values in brackets

Testoil-ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 3.74

En

PES 8 A 75 C 320 RS2357 EP/RSV 450-1300 AO B1040D  
Inlet pressure 2.5 bar 1 - 8 - 7 - 3 - 6 - 5 - 4 - 2 45° each  
With CRT 10 in start-of-delivery setting of cyl. 1, positioning  
device must engage in camshaft groove. Coupling must be  
horizontal in this setting.

supersedes

12.73

company

I H C

engine

DV 550 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

End of pump delivery 3,95 + 0,1 mm (from BDC) (RW 10,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0	6,2-6,6				
1300	ca. 8,2	max. 4,5	(Cyl. 1-4-6-7)			
	ca.	0,1-1,3	(Cyl. 2-3-5-8)			
450	ca. 8,8	min. 3,4	(Cyl. 1-4-6-7)			
		0,1-1,4	(Cyl. 2-3-5-8)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 52	1300	13,0	without auxiliary spring			ca. 30	450	5,7	1300	0
	1400	9,8					300	19 - 21		
	1500	5,9					450	5,4-6,0	550	0,6-0,8
	1400	9,2-10,2					600	1,5-3,5		
	1550	2,8- 5,0	with auxiliary spring				750	0 - 1		
	1770	0,3- 1,0								

Torque control travel a = mm

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	63,5-65,5	1350-1365*	1000	61,0-65,0	100	111,5-134,5		(Cyl. 1-4-6-7)
					100	0		(Cyl. 2-3-5-8)
					450	14,5-18,5		(Cyl. 1-4-6-7)
					450	0		(Cyl. 2-3-5-8)

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 30.3.72

En

PES 6 A 90 D 420 LS 2354 EP/RSV 375-1050 A2B622DR

supersedes

company Case  
engine A 451 BDT

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,6 - 5,1	0,5			
	6 12	1,1 - 2,0 8,4 - 9,4				
200	9	2,7 - 3,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 38	1080	12,4	without auxiliary spring			ca. 18	375	7,2	1050	0
	1110	8,1					150	19 - 21	800	0,4-0,6
	1160	2,3					375	6,9-7,5		
2a	1090	12,2-13,0	with auxiliary spring				450	3,2-5,2	450	0,6-0,9
	1150	4,3- 5,6					580	0 -1,5		
	1240	0 - 1,5								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1050	100 - 102	1090		1150	8,0 - 18,0	100	12,6-13,2	375	15,25-19,25
				750	109 - 113				
				675	max. 112				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 29.8.74

En

PES 6 A 90 C 420 LS 2264 EP/RSV 300-1050 A2 B567DR  
 ..D.. LS 2354 375-1050  
 ..D.. LS 2461

supersedes 11.5.70  
 company 16.2.71/22.4.71  
 engine Case  
 A 451 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Test with case overflow valve!  
 Pay attention to special governor setting!

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
	9	4,6 - 5,1	0,4			
1000	6 12	1,1 - 2,0 8,4 - 9,4				
200	9	2,7 - 3,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 39	1070 1110 1160	12,4 7,7 2,3	without auxiliary spring			ca. 18	375	7,4	1050	0
	1090 1150 1260	11,8-12,4 4,8- 6,0 0 - 1					150 375 450 580	19 - 21 7,1 - 7,7 3,2 - 5,1 0 - 1	900 500	0,1 - 0,3 0,3 - 0,6
2a			with auxiliary spring							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1050	95,5-97,5	1090-1195:*		1150 750 650	8 - 18 99 - 103 max. 102	100	12,6-13,2	375	15,25-19,25

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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H1

H1

# Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4  
Edition 7.73

En

PES 4 A 85 C 410 RS 2331 EP/RSV 250-900 A1 B1029L  
PES 6 A 85 C 410 RS 2332

supersedes  
company Motori VM  
VM 114  
engine VM 116

Port closing difference between control-rod travel 13 mm and 21 = 6-7,5° camshaft.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,7 + 0,05 mm (from BDC)

RW 21

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	5,9 - 6,3	0,4			
1000	6	2,0 - 2,8				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			④ Lower rated speed Control-lever deflection in degrees 7			③ Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 50	900 16,0 960 10,8 1000 5,4		without auxiliary spring			ca. 24	250 6,0		880	0
②a	980 5,6-9,6 1050 0,9-3,2 1150 0 - 1						100 19 - 21 250 5,7-6,3 350 1,0-3,4 450 0 - 1		400 0 300 1,2-1,8	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to ) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
880	82,5-84,5	910				200 1,5-9,5 dispersion max.2)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4  
Edition 11.1.72

En

PES 6 A 90 C 410 RS 2326

RQV 250-1300 AB 787 DL

supersedes

company: Saurer  
engine: CP 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,8 - 6,3	0,4			
	6	2,5 - 3,4				
	12	10,2 - 11,1				
200	9	3,2 - 4,1				

Adjust the fuel delivery from each outlet according to the values in  .

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1300 1380 1460 1580	15,0-17,8 9 - 13 0 - 8 0	-	-	-	ca. 10	100 250 400 600 770	6,6-8,0 3,5-5,7 2,2-3,7 0,8-2,2 0	1300 600	0 0,4-0,6
						③a				

Torque control travel a = 0,5 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	74 - 76	1320	700 500	72,5 - 75,5 62,5 - 65,5	100	ca.15 mmRW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

H3

H3

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①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 9.72

En

PE 6 A 85 D 412 RS 2303 RQV 250-825/1400 AB819D

supersedes

company:

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

RQV 250-825/1400 AB819D

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1400	14,0-17,0	ca. 47	700	11,8-13,8	ca. 10	100	6,5-8,0	800	0
	1460	9,0-13,5		900	2,8- 4,8		250	3,4-5,7	500	0,9-1,1
	1540	1,5- 8,4		1000	0,6- 1,0		500	1,0-2,0		
	1660	0		1380	0		620	0	0-150	Start
									250	1,0-2,2
									400	2,4-2,9
									900	6,6-7,1
									1000	7,4-7,6
									1400	8,3
									1560-1660	end (11)

Torque control travel a = 1,0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥	Torque-control travel ⑤		
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
0,5 kp/cm²			0,5 kp/cm²					
1400	72,5-74,5	1430	800	69,0 - 72,0	Change-over point			
			0 kp/cm²		200 - 130 U/min			
			500	57,5 - 61,5				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

H4

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H4

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4  
Edition 2.7.71

En

PE 6 A 80 C 320 RS 2312 RQV 250-1200 AB760DR  
D

supersedes 9.5.71  
company: Enasa  
engine: 9120/30

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4		3,1 - 3,5	
200	6	1,2 - 2,0			0,1 - 0,6	
	15	10,3 - 11,4			- - -	
	9	2,9 - 3,7			0,6 - 1,3	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	1200	14,7-17,6	-	-	-	ca. 10	100	7,2-8,2		
	1250	10,5-14,0					250	4,4-6,6		
	1360	0 - 5					400	3,2-2,8		
	1420	0					600	1,6-2,8		
							800	0		
						3a				

Torque control travel a = 0 mm

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	64 - 66	1220			100	17,7-18,3		
					Change-over point 130-200 U/min			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

H5

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# Test Specifications

## Fuel Injection Pumps 1A

### and Governors

40

VDT-WPP 001/4

Edition 4.11.69

En

PES 6 A 85 C 410/3 RS 2297 EP/RSV 500-1100 A 4 B548 D  
Positioning bore in gear is start-of-delivery setting  
of cyl. 1 (on drive)!

supersedes  
company  
engine

Ford  
2704 E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,3	0,3			
	6 12	0,9 - 1,7 6,9 - 7,9				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 70	1100	16,0	without auxiliary spring			ca. 34	500	5,5	1080	0
	1150	11,0					150	19 - 21	1000	0,2-0,4
	1200	3,2					500	5,2-5,8	500	0,2-0,4
	with auxiliary spring		580	0 - 1						
	1150	9,0-11,5								
2a	1180	3,0- 8,0								
	1250	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	
1100	62,5 - 64,5	1120	800 500	58,5 - 61,5 53,0 - 57,0			500	5,0	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications

## Fuel Injection Pumps (1A)

### and Governors

40

VDT-WPP 001/4  
Edition 9.73

PES 4 A 90 C 410 RS 2294 EP/RSV 300-1200 A1B424DL  
(V10497D)

En

supersedes  
company  
engine

Daimler-Benz  
OM 314

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1.	2	3	4	2	3	6
1000	9	4,5 - 5,0	0,4			
	6	1,8 - 2,6				
	12	7,3 - 8,2				
200	9	2,0 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 67	1200	16,0	without auxiliary spring			ca. 28	300	7,3	1180	0
	1250	11,2					100	19 - 21	700	0
	1290	6,4	with auxiliary spring				300	7,0-7,6		
	1260	8,5-11,0					450	3 - 5	350	0,3-0,5
	1320	2,0- 4,8					640	0 - 1		
2a	1440	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1180	54,0-56,0	1225:0,5-1,0		800	46,0-49,0	100	15,0-15,6	300	7,3
		mmRW less than column 2		500	41,5-44,0		mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col 2

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H7

H7

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 24.4.70

En

PES 6 A 80 C 420 LS 2264

EP/RSV 300-950 A 2 B520DR

supersedes

10.69

Test with case overflow valve!

Pay attention to special governor setting!

company

Case

engine

A 401 BD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,1 - 4,5	0,3			
	6	1,3 - 2,1				
	12	6,8 - 7,6				
200	6	1,3 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

<b>(1)</b> Upper rated speed rev/min			Intermediate rated speed			<b>(4)</b> Lower rated speed			<b>(3)</b> Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 43	960	10,8	without auxiliary spring			ca. 27	375	6,0	930	0
	1000	8,7					150	19 - 21	750	0,5-0,7
	1050	5,0					375	5,7-6,3	450	0,8-1,1
<b>(2a)</b>	1000	8,0-9,0	with auxiliary spring				450	3,3-4,6		
	1100	1,2-3,0					600	0 - 1		
	1160	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery		<b>(4a)</b> Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
930	60,5-62,5	960	1040	10,5 - 18,5	100	11,1-11,7	375	12,5	
			650	69,0 - 72,0				15,5	
			550	max. 71,0					

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications

## Fuel Injection Pumps (1A)

### and Governors

40

VDT-WPP 001/4

Edition 25.1.73

En

PES 6 A 85 C 420 LS 2264

EP/RSV 300-950 A 2 B 553 DR  
375-950

supersedes 28.4.71

company Case

engine A 401 BD

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4			
	6 12	1,1 - 1,9 7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control		
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
	2	3	4	5	6		8	9	10	11	
ca.40	970	10,4	without auxiliary spring			ca.23	375	6,3	950	0	
	1020	6,6					150	19 - 21			
	1170	2,2					375	6,0-6,6			
	990	10,2-10,6	with auxiliary spring				450	3,1-4,5			800
1050	3,8- 5,2	600					0 - 1	400			1,3-1,6
1140	0 - 1										

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
950	59,0 - 61,0	990	1045	6,5 - 14,5	100	12,6-13,2	375	12,5-16,5	
			600	71,0-75,0					
			500	max. 73,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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H9

H3

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 11.8.72

En

PES 6 A 85 C 420 LS 2264 EP/RSV 900-925 A 2 B 544 DR  
375-925

supersedes 28.4.71  
company C a s e  
engine A 401

Test with case overflow valve!  
Pay attention to special governor setting!  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4			
	6 12	1,1 - 1,9 7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.40	940	10,2	without auxiliary spring			ca.24	375	6,6	925	0
	1000	5,8					150	19 - 21		
	1050	2,0	375	6,3-6,9	800		0,5-0,7			
	2a	965	9,9-10,4	with auxiliary spring				450	3,6-4,5	
1000		6,0- 7,2	600				0 - 1	450	1,3-1,6	
1120	0 - 1									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery rate		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
925	55,0 - 57,0	965		1010	8,5 - 16,5	100	12,6-13,2	375	12,5-16,5
				550	64,5 - 68,5				
				450	max. 67,0				

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4  
Edition 17.2.71

En

PES 6 A 85 C 420 LS 2264

EP/RSV 300-1000 A 2 B 546 DR

supersedes

16.9.70

375-1000

company

C a s e

engine

A 401 BD

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
	9	4,8 - 5,3	0,4			
1000*	6 12	1,7 - 2,5 8,2 - 9,0				
200	6	1,1 - 1,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed	④ Control lever deflection in degrees	Lower rated speed rev/min	Control rod travel mm	③ Torque control rev/min	Control rod travel mm
1	2	3	4 5 6	7	8	9	10	11
ca. 40	1020	10,5	without auxiliary spring	ca. 22	375	6,5	980	0
	1050	7,4			150	19 - 21	800	0,5 - 0,7
	1070	5,6			375	6,2-6,8	450	0,9 - 1,2
②a	1050	6,5 - 8,0	with auxiliary spring		450	3,0-4,6		
	1100	3 - 4,3			600	0 - 1		
	1200	0 - 1						

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational- speed limitat Note changed to ) rev/min		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8		Control rod travel mm 9	
980	58,0 - 60,0		1020	650 550	63,0 - 66,0 max. 65,0	100	12,6-13,2	375		12,5- 16,5	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 31.7.73

En

PES 4 A 85 D 420 LS2263 EP/RSV 375-1050 A2B706DR

supersedes

company

engine

Case  
A 336 BD

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	4,15-4,55	0,4			
	6 12	1,15-1,95 7,25-8,05				
200	6	0,95-1,75				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 40	1070	13,4	without auxiliary spring			ca. 18	375	8,0	1050	0
	1100	10,0					150	19 - 21		
	1140	3,6					375	7,7-8,3		
(2a)	1090	13,2-13,8	with auxiliary spring				450	3,5-5,6	500	0,2-0,5
	1150	4,8- 6,6					600	0 - 1		
	1240	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1050	94,5 - 96,5	1080-1095	750 650 1150	98,5-102,5 max. 101,5 8,5- 18,5		100	12,4-13,4	375	17,5-23,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

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H12

H12

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 2.9.71

En

PES 4 A 85 C 420 LS 2263 EP/RSV 300-950 A 2 B 519DR  
375-950

supersedes 23.2.71  
company Case  
engine A 336 BD

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000*	9	4,1 - 4,5	0,4			
	6	1,1 - 1,9				
	12	7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 43	970	11,6	without auxiliary spring			ca. 27	375	7,0	950	0
	1000	9,4					150	19 - 21	400	0,4-0,7
	1050	6,0	with auxiliary spring				375	6,7-7,3		
2a	1050	5,0-6,6					450	4,2-5,5		
	1100	2,1-3,8					640	0 - 1		
	1200	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104° F)		Note changed to )							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
930	86,0 - 88,0	970		750 500	92,5-95,5 max. 94,5	100	12,6-13,2	375	18,5- 22,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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H15

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4  
Edition 24.2.70

En

PES 4 A 80 C 420 LS 2263 EP/RSV 300-950 A 2 B 518 DR

supersedes 30.6.69  
company C a s e  
engine A 267 BD

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	4,1 - 4,5	0,3			
1000	6 12	1,3 - 2,1 6,8 - 7,6				
200	6	1,3 - 2,1				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

<b>(1)</b> Upper rated speed rev/min			Intermediate rated speed			<b>(4)</b> Lower rated speed			<b>(3)</b> Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 46	970 1000 1070	11,0 9,0	without auxiliary spring			ca. 29	375	6,5	960	0
	1050 1100 1200	5,0-6,8 2,4-4,0 0 - 1					150 375 450 630	19 - 21 6,2-6,8 3,9-5,2 0 - 1	800 450	0,3-0,5 0,7-1,0
<b>(2a)</b>			with auxiliary spring							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery Idle		<b>(4a)</b> Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
930	58,0-60,0	970	650 550	65,0-68,0 max. 67,0		100	11,1-11,7	375	12,5-16,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

H16

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②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 KHD 17,4 a  
Edition 6.71

En

PE 12 A 85 C 520 RS 2256 RQ 200/1150 AB 638 DR

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 - 1  
0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315 - 360°

supersedes 3.70  
company: K H D  
engine: F 12 L 814  
(300 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5	0,4			
	6	1,3 - 2,1				
	15	12,3 - 13,1				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11	12				
530	15,3-15,9	550	15,6	1170	13,6-14,0	540	0	100	6,5-8,1	600	15,4-15,7				
				1200	6,5-12,5			200	3,8-5,4	800	14,8-15,2				
				1230	0 - 8,3			300	3,0-5,3						
				1290	0			440	0	1050	14,0-14,3				

Torque-control travel  
on flyweight assembly dimension a = 0,65 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2		Control rod travel mm 3a		cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7	
1150	76,5 - 78,5			1000	77,5 - 79,5	100	ca. 16 mm RW
				700	82,5 - 84,5		

Checking values in brackets

Testoil-ISO 4113

H17

H17

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

En

PES 6 A 85 C 410 RS 2254 EP/RSV 250-1125 A 1 B 41 L  
250-1100\*  
.. A 1 B 290 L

supersedes  
company Kaelble  
engine MD 215S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15+0,1 mm (from BDC) RW 9 mm = 0,6+0,1 max.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	6	1,3 - 2,1				
	9	3,9 - 4,3	0,4			
	15	9,8 - 11,2				
200	9	3,9 - 4,4	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 62	1125	16,0				ca. 26	250	6,0	1100	0
	1180	10,5					100	1,9-2,1	400	0
	1230	4,0					250	5,7-6,3	290	1,2-1,8
							300	0,9-3,3		
							440	0 - 1		
2a	1170	10,6-12,5								
	1220	3,4- 3,7								
	1340	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min:							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1100	71,5-73,5	1120							
1120	74,5-76,5	1140							

Checking values in brackets

\* 1 mm less control rod travel than col 2

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 6.68

En

PE 4 A 80 C 410 RS 2249  
(V 8595)

EP/RSV 250-900 A 1 B 274 DL

supersedes

company

engine

Torpedo  
T 524 TK

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,15 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0				
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 3,1				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 49	900 16,0 950 11,4 990 5,8		without auxiliary spring			ca. 23	250 6,0		880 0 800 0 - 0,2 700 0,3-0,5	
2a	970 7,0-10,3 1000 4,0- 6,8 1050 0,9- 3,6 1120 0,3- 1,0						100 19,0-21,0 250 5,7-6,3 350 3,5-4,7 450 0 -2,8 550 0 -1,0		550 0,7-0,9 350 0,7-0,9	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7			
900	76,0 - 79,0	910 - 920	700 500	79,5 - 83,5 76,5 - 80,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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H19

H19

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 29.11.68

En

RO-PES 4 A 90 C 410 RS 2240 RO-EP/RSV 250-900 A1B262 DL

supersedes

company

engine

Mefin  
D 103  
(65PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	9	5,8 - 6,3	0,4			
	6 15	2,5 - 3,4 13,5 - 14,8				
200	9	3,2 - 4,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11		
ca. 48	900	16,0	without auxiliary spring			ca. 23	250	6,0	880	0		
	950	11,0					100	19 - 21				
	980	6,6					250	5,7-6,3				
	950	9,5-12,0	with auxiliary spring				300	3,5-4,6			700	0,3 - 0,5
1000	1,8- 6,0	420					0 - 1	400			0,7 - 0,9	
1060	0 - 1											

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104 F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
900	71,0 - 73,0	920	600 400	78,0 - 81,0 68,0 - 70,0	100	mind. 20mm RW			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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H2O

1120

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

Edition 6.3.67

En

PE 4 A 75 C 412 RS 2222

EP/RSV 250-1600 A2B 484 DL

supersedes

company

engine

Hotschkiss

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	3,7 - 4,1	0,3			
	6	1,2 - 1,9				
	15	9,3 - 10,3				
200	9	2,2 - 3,0				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed	4 Control lever deflection in degrees	rev/min	Control rod travel mm	3 Torque control	Control rod travel mm
1	2	3	4 5 6	7	8	9	10	11
ca. 69	1600	16,0	without auxiliary spring	ca. 24	250	7,0	1580	0
	1680	10,8			150	19 - 21	1200	0 - 0,2
	1740	6,4			250	6,7-7,3	800	0,6-0,8
	1700	7,8-10,4	with auxiliary spring		450	3,5-5,3	400	0,9-1,1
	1800	2,4- 5,0			600	0 - 3,3		
	1950	0 - 1			760	0 - 1		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop	6 Rotational speed limit	3a Fuel delivery characteristics	Starting fuel delivery Idle	4a Idle stop
Test oil temp 40°C (104°F)	Note changed to ) rev/min			
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min
1	2	3	4	5
1500	44,0-46,0	1620	1675	250
			500	
			1600	
			5,0-15,0	0,9-1,1
			42,0-45,0	
			43,0-46,0	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 4 A 85 C 320/3 RS 2121  
PES 4 A 85 D 320 RS 2423

EP/RSV 300-1000 A1B41  
EP/RSV 300-1050 A1B41

(1)  
(2)

supersedes  
company  
engine

11.64, 10.74  
Hüllmann  
D 300 (1)  
D 310 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

★★

Port closing at prestroke 1,5+0,1 RW9 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery "D" cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 5,9	0,4	9	5,6 - 6,0	
	6	1,6 - 2,6		6	2,3 - 3,1	
	12	9,4 - 10,4		-	- - - -	
200	6	0,4 - 1,3		6	0,1 - 0,7	

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1050	16,0	without auxiliary spring			ca. 25	300	6,0	1030	0
	1100	10,2					100	19 - 21		
	1150	3,0					300	5,7-6,3		
2a	1100	8,4-12,0	with auxiliary spring				350	3,6-4,5	340	1,2-1,8
	1150	2,4- 5,8					450	0 - 1		
	1250	0,3- 1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop Test oil temp 40°C (104°F)		<b>(6)</b> Rotational- speed limitat Note changed to ) rev/min		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery Idle		<b>(5)</b>		<b>(4a)</b> Idle stop Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min			
1	2	3	4	5	6	7	8	9			
(1)	ca. 10 mm RW-	1020									
(2)	1050 83,5-85,5	bzw. 1090-1100*				100	6,1 - 7,1				
** Port closing difference between control-rod travel 6 - 7° camshaft.						9 mm	and 21 =				

Checking values in brackets

\* 1 mm less control rod travel than col 2

H22

422

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# Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4  
Edition 3.6.69

En

PES 6 A 90 C 420 LS 2209

EP/RSV 225-1100 A 1 B 467 R

supersedes  
company  
engine

Berliet  
MH 635

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	6	2,9 - 3,7	0,4			
	9	7,4 - 7,9				
	15	16,0 - 17,3				
200	6	1,1 - 2,0				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Testoil-ISO 4113

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1100	16	without auxiliary spring			ca. 24	225	6,0	750	0
	1140	12,3					100	19 - 21	400	0
	1180	7,3	with auxiliary spring				225	5,7-6,3		
②a	1160	8 - 11,0					320	1,6-3,9	275	1,2-1,8
	1220	2,2-4,6					430	0 - 1		
	1320	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
750	125,5-128,5					100	min RW 20		

Checking values in brackets

\* 1 mm less control rod travel than col 2

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

En

PES 4 A 80 C 320 RS 2202

EP/RSV 200-950 A 7 B 476 R

supersedes

company

engine

MAN

D 0834 M5  
(73 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,3 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	6	1,2 - 2,0				
	9 15	4,1 - 4,5 10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 64	950	16,0	without auxiliary spring			ca. 24	200	6,0	950	0
	980	12,2					100	19,0-21,0	400	0
	1010	7,5					200	5,7-6,3	250	1,2-1,8
2a	1000	7,0-10,5	with auxiliary spring				300	1,8-3,8		
	1050	2,0- 3,8					400	0 - 1		
	1150	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
950	58,5 - 60,5	970							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 KHD 12,5

En

PE 10 A 90 C 610/4 LS 2180

RQ 250/1400 AB 575 DL

supersedes

company:

KHD

engine:

F 10 L 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4				
	6	2,7 - 2,5				
	15	13,4 - 14,3				
200	9	3,1 - 4,1				

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1300	13,6-15,4	1300	14,0	1400	13,8-14	520	0	150	6,2-8,1	700	15,8-16
				1440	4 - 12			250	4,2-6,5	850	15,2-15,5
				1460	0 - 9,4			350	0,8-3,2	1000	14,2-14,6
				1520	0			420	0		

Torque-control travel on flyweight assembly dimension a = 0,6 mm 0,05

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1380	74,5-76,5	600	1000 600	67,5 - 70,5 67,0 - 70,0		

Checking values in brackets

Testoil-ISO 4113

25.11.65

J1

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# Test Specifications

## Fuel Injection Pumps ②

### and Governors

VDT-WPP 001/4

Edition 10.65

En

PE 6 A 90 C 410 RS 2174 RQ 250/1200 AB 411 DL

supersedes

company:

FBW

engine:

CU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,65 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4	0,4			
	6	2,3 - 3,1				
	15	14,2 - 15,5				
200	9	3,8 - 4,3				

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16	1200	14,6-14,9	560	0	100	7 - 8,1	900	15,6-16
				1240	6,4-12,2			200	5,8-8,1	1000	15,3-15,7
				1280	0 - 7,2			300	3,5-6	1150	14,7-15,1
				1340	0			400	0 - 3,8		
								460	0		

Torque-control travel  
on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control  
rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /~1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /~1000 strokes 5	rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes/mm 7
1180	60,0 - 63,0	C, col. 6-7			100	14 mm RW

Checking values in brackets

Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4  
Edition 8.74

En

PES 6 A 85 D 410 RS 2139 RQ 250/1250 AB904DL

supersedes

company:

MAN

engine:

D 0846 HM 11  
(Korea)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4			
	6	0,6 - 1,4				
200	9	1,4 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

PQ 250/1250 AB904DL

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3		Control rod travel mm 4		Test specifications Control rod travel mm 5		rev/min 6		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications Control rod travel mm 9		rev/min 10		Torque control rev/min 11		Control rod travel mm 12	
600		15,7-16,3		600		16,0		1270		14,4-14,7		520		0		150		6,4-7,8		900		15,8-16,0	
						*		1300		7,0-12,8						250		4,2-6,0					
								1330		0 -10						350		0,6-3,2		1150		14,8-15,1	
								1390		0						420		0					

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1290-1305

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1250	69,5 - 71,5 (68,5 - 72,5)	500		800 500	71,0 - 74,0 max. 69,5	100 250		11,9 - 12,9 7 mm RW	

Checking values in brackets

Testoil-ISO 4113

J4

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 5.10.66

En

PES 6 A 90 C 420 LS 2138

EP/RSV 300-1000 A8 B 204 DR

supersedes

9.6.64

company

C a s e

engine

A 451 DT

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,4 - 7,9	0,4			
	6	2,9 - 3,7				
	15	16,0 - 17,3				
200	6	1,1 - 2,0				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 42	1015	9,2	without auxiliary spring			ca. 23	300	5,5	980	0
	1040	7,2					150	19 - 21	800	0,3 - 0,5
	1070	4,8					300	5,2-5,8	600	0,7 - 0,9
	1050	5,8 - 7,9	with auxiliary spring				400	1,5-3,2	350	0,9 - 1,1
	1100	2,5 - 3,7					500	0 - 1		
	1200	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
980	80,0 - 83,0	1000-1015	800 700	84,7 - 87,7 86,0 - 89,0	100	7,9-8,9			

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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J5

J5

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 23.6.64

En

PE 6 P 90 C 310 RS 2125  
S 2228

EP/RSV 250-1100 A1 B173/1

supersedes  
company Lancia  
engine 516 000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

End of pump delivery 4,4 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,5	0,5			
	6	2,0 - 3,0				
	12	9,5 - 10,5				
200	9	3,0 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1100	16,0	without auxiliary spring			ca. 25	250	6		
	1150	11,0					100	19 - 21		
	1200	4,0					250	5,7-6,3		
	1170	6,4-10,3	with auxiliary spring				300	4 - 5		
2a	1200	2,8-6,6					450	0 - 1		
	1300	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9	
1	2								
1100	131,5 - 134,5	1120							
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.									

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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20.9.63

J6

J6



②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4

Edition 12.6.72

En

PES 6 A 95 D 410 RS 2108

RQ 250/1100 AB 818 DL

supersedes

company:

engine:

UWMF - Ungarn  
(MAN)  
D 2156 HM 6  
(170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	7,5 - 8,0	0,4			
1000	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
600	15,5-16,1	600	15,8	1100	14,0-14,4	570	0	150	6,7-8,1	800	15,2-15,5
				1120	13,8-14,3			250	5,1-7,2	1000	14,5-14,8
				1150	7,0-12,4			350	2,4-4,7		
				1200	0 - 6,0			470	0		
				1240	0						

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2		Control rod travel mm 3a		cm <sup>3</sup> /1000 strokes 5		Control rod travel mm 6b
1100	88,0 - 90,0		C, col 6-7	700 500	94,5-97,5 max. 94,5	100 250	mind. 18 mm RW 6,0 mm RW

Checking values in brackets

Testoil-ISO 4113

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J7

J7

①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 13.5.70

En

PES 6 A 95 C 410 RS 2108Y RQV 200-700/1100 AB767

supersedes

company:

engine:

M A N

D 2156 HM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	8,4 - 9,0	0,5			
	6	4,0 - 5,0				
	15	16,6 - 17,8				
200	9	5,9 - 6,9				

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1100	14,0-16,5	ca. 52	700	11,4-13,6	ca. 12	100	7,0-8,0		
	1150	8,2-12,8		850	2,4- 4,6		200	5,2-7,4		
	1200	1,4- 8,0		1000	0,4-0,8		300	1,8-4,2		
	1280	0		1150	0		500	0		
						3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	110,5-112,5		800	108,5-112,5	200	RW 6 mm		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 18.1.65

En

PE 6 A 80 C 321 RS 2113

EP/RSV 200-1250 A1 B420D

supersedes

RS 2103

B421D, B 440 D company  
B 442 D engine

Saviem  
130 N

Values apply to fuel-injection test tubing

1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 70	1250	16	without auxiliary spring			ca. 25	200	6	1230	0
	1300	11,2					100	19 - 21	1000	0,4-0,6
	1340	5,6	with auxiliary spring				200	5,7-6,3	700	1,0-1,2
	1310	8 - 10,6					350	2,5-4,2	500	1,0-1,2
	1340	4 - 7,2					550	0 - 1		
	1380	1,2- 3,8								
2a	1500	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1230	65,0-67,0	1260-1280	700	70,0-73,0	100	18,7-19,3	200	(ca. 6	
			500	67,5-70,5		mm RW		13,5-17,5	
			1250	mind. 65,0					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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J10

J10

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PE 8 A 90 C 410/3 RS 2102

EP/RSV 300-1050 A 2 B 418

supersedes

company

MWM

engine

AKD 412 AV

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,45 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,5	0,4			
	6 15	2,3 - 3,1 14,5 - 15,5				
200	9	3,8 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.45	1050	16	without auxiliary spring			ca.20	300	6	1000	0
	1100	12							500	0
	1150	8,2								
	1150	6 - 9								
	1200	2,8-5,6								
②a	1350	0 - 1	with auxiliary spring				400	2,4-4	350	1,2 - 1,8
							450	0,5-3		
							550	0 -1		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to ) rev/min 3		③a Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm <sup>3</sup> /1000 strokes 6 7		⑤ ④a Idle stop rev/min Control rod travel mm 8 9	
1030	57,0 - 59,0	1060-1080							

Checking values in brackets

\* 1 mm less control rod travel than col 2

KDA 13.11.63

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J11

JAA

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 6.11.69

En

PES 2 A 70 C 320 RS 2100  
PES 3 A 70 C 320 RS 2101

EP/RSV 375-900 A4 B417D

supersedes

company

engine

Kirlozkar

2 R

3 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	6,5 - 7,0	0,4			
1000	6 18	1,1 - 1,9 10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

<b>(1)</b> Upper rated speed rev/min			Intermediate rated speed			<b>(4)</b> Lower rated speed			<b>(3)</b> Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 50	900 930 950	16,0 11,2 7,2	without auxiliary spring			ca. 25	375	6,0	880	0
<b>(2a)</b>	940 1000 1100	8,0-10,6 2,0-3,8 0 - 1					100 375 480 600	19 - 21 5,7-6,3 2,0-3,9 0 - 1	750 500	0,2-0,4 0,6-0,8

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery <b>(5)</b>		<b>(4a)</b> Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	
880	40,5 - 42,5	910	800 650 450	39,5 - 42,5 43,0 - 46,0 41,5 - 44,5	100	13,7-14,3	375	6,0	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 6 A 80 C 310 LS 2097

EP/RSV 250-1000 A 1 B 173/1

supersedes  
company  
engine

Lancia  
ESADELTA  
401 - 070

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

End of pump delivery 4,6 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5				
	15	9,1 - 10,3				
200	9	0,9 - 1,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 8			3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9				
ca. 52	1000 16 1050 10 1080 5,8		without auxiliary spring			ca. 22	250 6			
	1060 7 - 10 1100 2,3- 4,8 1050 0,5- 1,9 1200 0,3- 1						100 19 - 21 200 8,4-10,2 250 5,7- 6,3 300 3,5- 4,8 350 0,7- 3,3 420 0 - 1			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 8 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7			
ca.	10 mm RW								

Checking values in brackets

\* 1 mm less control rod travel than col 2

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KDA 24.9.63

J13

J13

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4

Edition 23.10.64

En

PES 4 A 80 C 410 RS 2094

RQ 250/1500 AA 382 D

supersedes

company: Daimler-Benz

engine: OM 314

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,0 - 4,4	0,3			
	6	0,8 - 1,7				
	15	10,1 - 11,3				
200	9	2,7 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12	
600	15,6-16,0	600	15,8	1500	12,8-13,1	530	0	100	7,1-8,1	500	15,8-16,2
				1520	7,0-13,1			200	5,6-7,8	800	15,2-15,6
				1540	0,5-10,0			300	3,0-5,4	1100	14,4-14,8
				1580	0 - 4,0			400	0 - 1,5	1400	13,1-13,5
				1610	0			430	0	1480	13,1

Torque-control travel on flyweight assembly dimension a = 0,9 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7	Control rod travel
1480	57,0 - 59,0	500		1200	58,5 - 61,5	-	-
				1000	58,0 - 61,0		
				500	56,0 - 59,0		

Checking values in brackets

Testoil-ISO 4113

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J14

J14

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4  
Edition 16.2.65

En

PES 4 A 80 C 420 LS 2093 EP/RSV 200-1000 A 1 B 46

supersedes  
company  
engine

Bukh A/S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 + 0,1$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,3			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca.55	1000	16	without auxiliary spring			ca.24	200	6	980	0		
	1050	11,4					19 - 21					
	1090	5,8						5,7-6,3				
	1050	10,0-12,4									1,7-3,8	
	1100	3,0- 6,4										0 - 2,3
	1150	0 - 2,5										
1200	0 - 1,0	0 - 1,0										
2a												

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery		<b>(5)</b>		<b>(4a)</b> Idle stop	
Test oil temp 40°C (104°F)		Note changed to )				Idle					
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
900	57,5 - 59,5	1010-1020	-	-	-	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

BUKH

En

PES 6  
4 A 80 C 420 LS 2093

EP/RSV 200-900 A 1 B 197 D  
EP/RSV B 46 (B)

supersedes

company

engine

BUKH A/S  
Kalundborg  
4 K 105

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,6 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 43	900 920 950	16 13 7	without auxiliary spring			ca. 16	200	6	880 800	0 0,2-0,4 0,5-0,7 0,7-0,9 0,9-1,1
2a	950 1000 1100	4,8-8,6 1,2-3,3 0 - 1,0					100 200 300 400 500	19 - 21 5,7-6,3 3,2-4,8 0 - 3 0 - 1		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note, changed to							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
880	57,5-59,5	910-920		700 500	61,0-64,0 62,7 - 65,7	100	21 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 5.10.66

En

PES 4 A 80 B 420 LS 401

EP/RSV 300-950 A2 A 94 D

supersedes

19.2.60

PES 4 A 80 C 420 LS 2054

EP/RSV 300-950 A2 A 137 D

company

Case

engine

730/1900

731 c

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			③ Torque control Control rod travel rev/min mm 10 11	
ca. 45	Control rod travel mm 2	Control rod travel mm rev/min 3				ca. 24	300	6,5	950	0
	970	16,0	without auxiliary spring				100	19 - 21	800	0,3-0,6
	1050	11,3					300	6,2-6,8	650	0,8-1,1
	1130	5,6					400	2,8-4,3	400	0,9-1,2
②a	1100	6,2-9,0	with auxiliary spring				560	0 - 1		
	1150	3,0-5,3								
	1300	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note changed to ) rev/min 3		③a Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm <sup>3</sup> /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
930	67,5-69,5	950-965	650 500	74,5 - 77,5 73,0 - 77,0	100	7,5-8,6			

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 10.11.67

En

PES 6 A 80 C 420 LS 2054 EP/RSV 300-925A 2 B185 DR

supersedes

company

engine

Case

A 34007

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.43	940	9,4	without auxiliary spring			ca.26	300	5,5	905	0
	980	7,0								
	1010	5,0	with auxiliary spring	150	19 - 21		700	0,5-0,7		
	970	7,0-8,0		300	5,2-5,8		400	0,8-1,1		
	1050	2,2-3,6		400	2,0-4,6					
1130	0 - 1	540	0 - 1							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
905	64 - 66	925-940		650 500	69,0 - 72,0 67,0 - 70,0	100	7,7 - 8,6		

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 23.11.64

En

PES 6 A 80 C 420 LS 2054

EP/RSV 300-900 A 2 B 216 DR

supersedes

company

Case

engine

A 401 DU

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 41°	915	10,0	without auxiliary spring			ca. 24	300	5,5	880	0
	950	7,8					100	19 - 21	800	0,3-0,5
	990	5,0					300	5,2-5,8	600	1,1-1,3
2a	960	6,8-7,6	with auxiliary spring				400	1,8-3,2	400	1,2-1,5
	1020	2,4-3,9					550	0 - 1		
	1100	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9	
1	2								
880	70,0-72,0	900-915	650 500	78,5-81,5 77,5-81,5	100	7,7-8,7			

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 14,3,68

En

PES 6 A 85 C 420 LS 2054 EP/RSV 300-1000 A 2 B 240 DR

supersedes 16.5.66

company

C a s e

engine

A 451 D

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	6,5 - 7,0	0,4			
	6	2,3 - 3,1				
	15	14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 41	1015	9,2	without auxiliary spring			ca. 22	300	5,5	980	0
	1040	7,2					100	19 - 21	800	0,4-0,6
	1060	5,6					300	5,2-5,8	700	0,5-0,7
2a	1030	7,6-8,4	with auxiliary spring				400	1,2-3,2	400	0,5 - 0,7
	1070	4,2-5,3					500	0 - 1		
	1120	1,1-2,6								
	1160	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to 1 rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2		4	5	6	7	8	9	
980	75,0-77,0	1000-1015	800	79,5-82,5	100	8,0-8,9			
			600	78,0-82,0					
			1090	8,5-18,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps **1A** and Governors

**40**

VDT-WPP 001/4

Edition 16.5.66

En

PES 4 A 85 C 420 LS 2054 EP/RSV 300-1000 A 2 B 210 DR

supersedes

8.10.63

company

C a s e

engine

A 301 DF

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,5 - 7,0				
	6	2,3 - 3,1				
	15	14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 44	1015	9,2	without auxiliary spring			ca. 24	300	5,5	980	0
2a	1040	7,2					100	19 - 21	800	0,4-0,8
	1060	5,6					300	5,2-5,8	700	0,5-0,8
	1030	7,6-8,4	400	1,2-3,2	400	0,5-0,8				
	1020	1,1-2,6	with auxiliary spring			520	0 - 1			
1160	0,3-1,0									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104 F)		Note changed to ) rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	rev/min 7	cm <sup>3</sup> /1000 strokes 8	rev/min 8	Control rod travel mm 9
980	73,0 - 75,0	1000-1015	800 600	78,5-81,5 78,0-82,0	100	7,9-8,9			

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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J21

J21

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

En

PES 6 A 85 C 420 LS 1054 EP/RSV 300-1000 A 2 B 191 DR

supersedes

company

C a s e

engine

A 451 D

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	6,5 - 7,0				
	6	2,3 - 3,1				
	15	14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 41	1015	9,2	without auxiliary spring			ca. 22	300	5,5	950	0
	1040	7,2					100	19 - 21	800	0,4-0,6
	1060	5,6					300	5,2-5,8	700	0,5-0,7
	1030	7,6-8,4	with auxiliary spring				400	1,2-3,2		
	1120	1,1-2,6					500	0 - 1	400	0,5-0,7
	1160	0,3-1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
980	73,0 - 75,0	1000-1015		1080	8,5 - 18,5	100	8,0 - 9,1		
				800	78,5 - 81,5				
				600	78,0 - 82,0				

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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J22

J22

# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4

En

PES 4 A 85 C 420 LS 2054

EP/RSV 300-1000 A 2 B 134 D

supersedes

company

engine

J.I. Case  
A-301 DF

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,5 - 7,0				
	6	2,3 - 3,1				
	15	14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9			Control rod travel mm 11	
ca. 44	1015 9,5 1050 7,0 1080 4,8		without auxiliary spring			ca. 24	300 5,5		980 0	
	1050 6,5-7,4 1150 0,6-2,1 1200 0,3- 1						100 19 - 21 300 5,2-5,8 400 1,8-3,3 500 0 - 1		700 0,6 - 0,8 600 0,7 - 0,9 400 0,9 - 1,1	
2a			with auxiliary spring							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7					
980	75,5 - 77,5	1000-1015	700 600 1090	80,5 - 84,0 79,5 - 84,0 16,5 - 24,0		100	8,4 - 9,5				

Checking values in brackets

\* 1 mm less control rod travel than col 2

KDA 8.10.63

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 5.10.66

En

PES 4 A 85 B 420 LS 445 EP/RSV 300-450 A 5 A136D  
PES 4 A 85 C 420 LS 2054

supersedes 21.9.64  
company C a s e  
engine 830/1700  
831

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	6,5 - 7,0	0,4			
	6	2,3 - 3,1				
	15	14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 44	865	9,2	without auxiliary spring			ca. 26	300	5,5	830	0
	880	8,0					100	19 - 21	700	0,2-0,5
	920	5,2					300	5,2-5,8	600	0,4-0,7
	880	7,7-8,5	with auxiliary spring				400	1,5-3,2	400	0,5-0,7
	950	3,0-4,2					500	0 - 1		
②a	1050	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ die stop	
Test oil temp 40°C (104°F)		Note changed to )						Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3		4	5	6	7	8	9
830	74 - 76	850 - 865		600	77,0 - 80,0	100	8,4-9,5		
				450	75,0 - 79,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 9.6.64

En

PES 4 A 85 C 420 LS 2054

EP/RSV 300-900 A 2 B 134 DR

supersedes

company

engine

Case  
A 301 DH

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BUC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,5 - 7,0	0,4			
	6	2,3 - 3,1				
	15	14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	915	9,4	without auxiliary spring			ca. 23	300	5,5	880	0
	950	7,0					150	19 - 21	700	0,3-0,5
	980	4,7	with auxiliary spring				300	5,2-5,8	500	0,6-0,8
②a	950	6,5-7,4					400	1,4-3,2	400	0,6-0,8
	1000	4,1-4,3					500	0 - 1,0		
	1050	0,3-2,0								
	1100	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	rev/min 7	cm <sup>3</sup> /1000 strokes 8	rev/min 9	Control rod travel mm 10
880	74,2 - 76,2	900 - 915	650	78,7-81,7	100	7,9 - 8,9			
			500	75,5-79,5	High	idle speed			
					990	1,4 - 2,4			

Checking values in brackets

\* 1 mm less control rod travel than col 2

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K1

K1

As opposed to VDT-WPP 001/4 - first supplement - the special setting is as follows:

- |   |                        |             |
|---|------------------------|-------------|
| 1. Governor-spring adjustment   | corresponds to         | (1)         |
| 2. Pre-adjustment of full-load delivery and noting down of control-rod travel                         | roughly corresponds to | (2)         |
| 3. Screw in torque-control retainer until control-rod travel is 1 mm more than that measured under 2. | roughly corresponds to | (3)         |
| 4. Final adjustment of full-load delivery by screwing back full-load stop screw                       | roughly corresponds to | (2)         |
| 5. Adjustment of breakaway  | corresponds to         | (6)         |
| 6. Testing of torque control and fuel-delivery characteristics  | roughly corresponds to | (3)<br>(3a) |
| 7. Idle adjustment  | corresponds to         | (4)         |
| 8. Testing high idle<br>Test starting fuel delivery and adjust with control-rod stop                  | corresponds to         | (6a)        |

Please consult test instructions as regards information given in parentheses.

En

WPP 001/4

En

PES 4 A 80 C 420 LS 2054

EP/RSV 300-850 A5B 132 d

**supersedes**

company

C a s e  
730/170

engine

**All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers\***

### A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15 + 0,1$ 

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 49	860	10,0	without auxiliary spring			ca. 24	300	5,8	830	0
	900	7,0					100	19,0-21,0	650	0,5-0,7
	925	5,0					300	5,5- 6,1	400	0,8-1,0
	900	6,6-7,5					400	1,5- 3,5		
	950	3,0-4,2					520	0 - 1,0		
②a	1050	0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop Test oil temp 40°C (104 F)		<b>(6)</b> Rotational-speed limitat Note changed to ) rev/min		<b>(3a)</b> Fuel delivery characteristics rev/min      cm <sup>3</sup> /1000 strokes		Starting fuel delivery Idle <b>(5)</b> rev/min      cm <sup>3</sup> /1000 strokes		<b>(4a)</b> Idle stop rev/min      Control rod travel mm	
1	2	3	4	5	6	7	8	9	
830	71,5 - 73,5	850-865	600 500 935	76,0-79,0 74,5-78,5 10,5-20,0	100	7,5-8,6			

### Checking values in brackets

\* 1 mm less control rod travel than col 2

25.3.63

# BOSCH

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 5.10.66

En

PES 6 A 80 B 420 LS 445  
PES 6 A 80 C 420 LS 2054

EP/RSV 300-800 A5 A 135 D supersedes 24.4.63  
company C a s e  
engine 900 C  
931

Test with case overflow valve!  
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6	2,2 - 3,0				
	15	11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 44	815	9,6	without auxiliary spring			ca. 23	300	5,5	780	0
	840	7,5					100	19 - 21	700	0,2-0,5
	870	5,1					300	5,2-5,8	600	0,6-0,9
	850	6,5-7,3	with auxiliary spring				400	1,0-3,0	400	0,8-1,1
	900	2,7-4,0					500	0 - 1		
2a	1000	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
780	65,5 - 67,5	800-815		600	70,5 - 73,5	100	7,9 - 8,9		
				450	69,0 - 74,0				

Checking values in brackets

\* 1 mm less control rod travel than col 2

# Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4

Edition 18.3.65

En

PES 6 A 85 C 410 RS 2000

RQ 250/1200 AA 510 D

supersedes

company:

Kaelble

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,5 - 7,0	0,4			
	6	2,3 - 3,1				
	15	14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1100	14-14,8	1100	14,4	1200	14,2-14,4	520	0	100	7,0-8,0	500	16,0-16,1
				1230	5,4-12,2			200	5,7-7,8	600	15,7-16,0
				1260	0 - 7,5			300	3,1-5,4	800	14,8-15,3
				1310	0			420	0	900	14,4-14,8

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	Control rod travel mm	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	Control rod travel mm cm <sup>3</sup> /1000 strokes/mm 7
1180	80,0 - 82,0	500		800	83,0 - 86,0	-	-
				500	82,0 - 85,0		

Checking values in brackets

Testoil-ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PES 4 A 90 B 420 RS 2010 EP/RSV 200-900 A4A 130 D

supersedes

company Allis-Chalmers  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

2,15 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4	0,4			
	6	2,3 - 3,1				
	15	14,2 - 15,5				
200	9	3,7 - 4,6				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	1a 2a	Degree of deflection of control lever	rev/min mm	Control rod travel mm	4	Degree of deflection of control lever	rev/min mm	Control rod travel mm	3	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca. 55	900	16						ca. 23	200	6		880	0
	940	12							100	19 - 21		700	0,1-0,3
	980	6,6							200	5,7-6,3		500	0,6-0,8
	940	11 - 13							350	2,2-4,1		300	0,8-1
	980	4,8-8,2							550	0 - 1			
	1040	1 - 3,4											
	1100	0,3-1											

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
ca.	10 mm RW	910 - 920						
ca. 88	cm <sup>2</sup>							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

KDA 9.11.62

K6

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 18.2.69

En

PES 3 A 75 C 320/3 RS 1236 EP/RSV 350-1250 A 2 B 531 DR

supersedes

company

engine

M W M  
D 325 - 3  
(Dieter)  
(50 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	6,2 - 6,6	0,4			
1000	9	3,2 - 3,7				
	15	8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9			
ca. 48	1250 16,0 1300 11,7 1350 6,8		without auxiliary spring			ca. 20	350 6,0			
	1330 7,4-10,2 1400 3,0- 4,8 1540 0 - 1						150 19 - 21 350 5,7-6,3 500 2,6-4,3 700 0 - 1		1250 0 1000 0,3-0,5 600 0,5-0,7	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min cm <sup>3</sup> /1000 strokes 1 2		6 Rotational-speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm <sup>3</sup> /1000 strokes 6 7		5 4a Idle stop rev/min Control rod travel mm 8 9	
1250	53,0 - 55,0	1270		800 49,0 - 52,0 500 45,0 - 48,5				350	6,0

Checking values in brackets

\* 1 mm less control rod travel than col 2

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K7

K7



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 28.3.69

En

PES 2 A 70 C 310 RS 1233 EP/RSV 200-1250 A1B5527 L

PES 4 A 70 C 410 RS 1234 EP/RSV 200-1250 A1B5527 L

supersedes

company

engine

Couach

DX 2

DX 4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	6,5 - 7,0				
1000	6 18	1,2 - 2,3 10,9 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 72	1250 1300 1350	16,0 11,4 4,7	without auxiliary spring			ca. 27	200	6,0	500	0
2a	1320 1370 1460	5,2- 7 3,4- 4 0 - 1					100 200 300 400 470	19 - 21 5,7-6,3 2,6-4,2 0 - 1,8 0 - 1,0	370 250	0 1,2 - 1,8

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to ) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	38,5 - 40,5	1250-1280				100	64,5-74,5		

Checking values in brackets

\* 1 mm less control rod travel than col 2

K8

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K8

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4  
Edition 27.2.67

En

PES 3 A 70 C 410/3 RS 1183  
PES 4 A 70 C 410/3 RS 1183  
PES 6 A 70 C 410/3 RS 1197

EP /RSV 425-1500 A5 B486DL

supersedes

company K H D  
engine F 3  
F 4 L 811 D  
F 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,9 - 4,4	0,3			
	6	1,5 - 2,7				
	12	5,9 - 6,9				
200	6	0,3 - 1,4				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Testoil-ISO 4113

<b>(1)</b> Upper rated speed rev/min			Intermediate rated speed			<b>(4)</b> Lower rated speed			<b>(3)</b> Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 72	1500	16,0	without auxiliary spring			ca. 26	425	6,0	1480	
	1560	11,2					200	19 - 21	1100	0 - 0,3
	1620	5,6					425	5,7-6,3	800	1,3-1,5
<b>(2a)</b>	1600	6,0 - 9,0	with auxiliary spring				550	2,9-4,4	600	1,4-1,6
	1650	2,6 - 5,0					760	0 - 1		
	1780	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery Idle <b>(5)</b>		<b>(4a)</b> Idle stop	
Test oil temp 49°C (104°F)		Note: changed to ) rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	cm <sup>3</sup> /1000 strokes 7	8	rev/min 9	Control rod travel mm 9
1500	43,0 - 45,0	1520							

Checking values in brackets

\* 1 mm less control rod travel than col 2

K10

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K10

# Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4

Edition 30.9.66

En

PES 3 A 70 C 310 RS 1180

EP/M 60 A 158 DL

supersedes

company

Lamborghini

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,9 + 0,1$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 2,3 10,0 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in [ ]

## B. Governor Settings

Torque control travel mm	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
1,2+0,1	500-480	10	580	8,1	-	-	600*	8,0-8,1	100	9,2-9,4
							630	5,6-7,6	200	9,2-9,4
							680	1,5-5,3	250	8,7-9,2
							750	0 -2,6	325	8,1-8,5
									450	8,1

\* control rod travel test (cols 4-11)  
= rotational speed 500 rev/min  
adjust breakaway (cols. 4-5) by means of shims\*  
cam adjustment (B 8-9 - C 7-8) by means of shims\*\*

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	mm cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7		8
1000	580	33,0 - 35,0	-	-	-			

\* Set breakaway between 600-620 mm water column by inserting washers under the governor spring.

Checking values in brackets

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

Edition 4.2.69

En

PES 2 A 85 C 310 RS 1065  
PES 2 A 85 C 310 RS 1178

EP/RSV 250-900 A1 B164L

supersedes  
company  
engine

14.2.67  
Motori VM  
VM 25 DA  
VM 30 DA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,7 + 0,05 mm (from BDC) RW 21 \*\*

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	5,8 - 6,3	0,4			
1000	6 12	2,3 - 3,5 9,5 - 10,5				
200	9	3,4 - 4,4				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

250 - 900

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 50	900 960 1000	16,0 10,8 5,4	without auxiliary spring			ca. 24	250	6	880	0
	980 1050 1150	5,6-9,6 0,9-3,2 0 - 1					100 250 350 450	19 - 21 5,7-6,3 1,0-3,4 0 - 1	400 300	0 1,2-1,8
2a			with auxiliary spring							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
880	80,5-82,5	910			100	12,5-15,5			
** Port closing difference between control-rod travel 10.5mm and 21 = 1.5-2° camshaft.									

Checking values in brackets

\* 1 mm less control rod travel than col 2

K12

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K 12

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

Edition 3.74

En

PES 4 A 70 C 410 RS 1177 Z

EP/RSV 250-1500 A 2 B 490 L

supersedes

17.10.69

company

21.11.69

engine

Arona

C 490

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,5 - 6,0	0,3			
	9	3,0 - 3,8				
200	9	1,8 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
ca. 58	Control rod travel mm 2	Control rod travel mm rev/min 3				ca. 18				
	1500	16	without auxiliary spring			250	6		1480	0
	1560	10,6				100	19 - 21		500	0
	1610	6				250	5,7-6,3		310	1,2-1,8
	1600	5,4-8,8	with auxiliary spring			300	4,7-5,3			
	1650	2,2-4,8				400	1,2-3,2			
	1700	0 - 2,7				550	0 - 1			
	1800	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		
1480	30,0-32,0	1530-1540*							

Checking values in brackets

\* 1 mm less control rod travel than col 2

K13

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K13

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 5.71

En

PES 3 A <sup>70</sup> C 410 RS 1177 EP/RSV 250-100A 1 B 12 L  
80  
PES 2 A <sup>70</sup> C 310 RS 1176  
80

supersedes 1.71  
company Lamborghini  
engine FL 3, 45  
FL 2, 30

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 7 Ø cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery 8 Ø cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4	9	5,5 - 6,0	0,4
	6 18	1,2 - 1,9 10,9 - 11,9		6 15	2,2 - 3,0 11,5 - 12,8	
200	6	0,7 - 1,5		6	1,3 - 2,2	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 55	1000 1060 1100	16,0 10,5 5,7	without auxiliary spring			ca. 25	250	6,0	980	0
	1100 1150 1250	3,5-7,8 0,5-3,2 0,3-1,0					100 250 300 450	19 - 21 5,7-6,3 3,7-4,8 0 - 1,0	400 300	0 1,2 - 1,8

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)	rev/min 1	cm <sup>3</sup> /1000 strokes 2	Note changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
	7 Ø 1000 8 Ø 1000	ca. 44 ca. 58,5	1030						

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

Edition 10.68

En

PES 3 A 70 C 320 RS 1160 EP/RSV 450-1400 A 2 B 451 DR

supersedes 12.65  
company Indenor/Peugeot  
engine KDP 88  
(Compressor)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,3 - 5,6	0,3			
	9	2,6 - 3,3				
	18	8,9 - 9,7				
200	9	2,0 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 65	1400 12,0 1450 9,4 1500 6,4		without auxiliary spring			ca. 31	450 5,5		1380 0 1140 0	
2a	1450 8,7-9,9 1500 5,1-7,3 1600 1,1-3,3 1700 0,3-1,0						300 19,0-21,0 450 5,2- 5,8 550 3,4- 4,4 650 0,8- 2,9 800 0 - 1,0		1000 0,4-0,6 800 0,8-1,1 550 0,8-1,1	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2		cm <sup>3</sup> /1000 strokes 3		cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
1380	32,5-34,5	1410-1430+	900 500	25,0-28,0 21,5-24,5		100	5,9-6,9	450	7,5-11,5
								(Control lever ca 29°)	RW 7,4)
+At n = 1450 control rod must have moved out of full-load position by 1.0-2.0 mm CRT.									

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K15

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 10.6.65

En

PES 6 A 75 C 320/3 RS 1150 EP/RSV 300-1300 A2 B 398 DR  
RS 1149 EP/RSV 300-900 A7 B 407 DR

supersedes

company

engine

MWM

AKD 110,5 B

AKD 110,5 V

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	3,2 - 3,7	0,3			
	6	0,9 - 1,7				
	15	8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 49	1300	16	without auxiliary spring			ca. 18	300	6		
	1350	11,7					100	19 - 21		
	1400	6,7					300	5,7-6,3		
	1380	7,4-9,8	with auxiliary spring				500	1,5-3,6		
	1480	1,8-4,1					700	0 - 1		
2a	1600	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1280	55,5-57,5	1310-1330							
									./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

K17

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K17



# Test Specifications Fuel Injection Pumps **(1A)** and Governors

# 40

VDT-WPP 001/4

Edition 15.2.72

En

PES 4 A 90 C 320 RS 1145  
80

EP/RSV 200-700 A4 B22DR (1)  
200-725 (2)

supersedes 18.5.67  
company I H C  
engine TD 14 (1)  
D 264 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15±0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery 9 Ø cm³/100 strokes	Difference cm³/100 strokes	Control rod travel mm	Fuel delivery 8 Ø cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	15	13,6 - 14,3	0,5	9	4,1 - 4,5	
	6	2,3 - 3,1		6	1,2 - 2,0	
	15			15	10,3 - 11,4	
200	9	3,2 - 4,1		9	3,9 - 4,4	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm/rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 44	700	16,0	without auxiliary spring			ca. 22	200	6,0	680	0
	750	10,0					125	19 - 21	450	1,2 - 1,4
	775	6,0					200	5,7-6,3	300	1,7 - 1,9
	750	9,0-11,8	with auxiliary spring				350	2,3-4,6		
	800	2,5- 4,6					450	0 - 2,5		
	900	0 - 1					530	0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
ca.	10 mm RW	720							
725	24,5-27,5	730	225	20,5-24,5					
(ca.	RW 9,8)			(ca. RW 7,6)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K18

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 17.3.66

En

PES 2 A 60 C 110 RS 1144

EP/RSV 400-1250 A 2 B 435 DL

supersedes

company John-Deere-Lanz  
engine 204

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,7 + 0,1$  mm (from BDC) RW 9  
 $2,5 - 2,7$  mm (from BDC) RW 21

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	4,5 - 5,0	0,3			
1000	6	0,6 - 1,2				
	9	2,4 - 3,2				
200	6	0,3 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 48	1250 1300 1350	16 12 7	without auxiliary spring			ca. 21	400	6	1230	0
2a	1300 1400 1550	11,2-12,6 2,8- 4,8 0 - 1					150 400 550 750	19 - 21 5,7-6,3 2,2-4,0 0 - 1	1100 900 500	0,4 - 0,6 0,8 - 1,0 0,8 - 1,0

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note changed to )							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1230	45,0 - 47,0	1270	900 500	47,5 - 50,5 47,0 - 50,0	1320	4,6-5,6 mm RW	400	6	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

K19

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K19

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4  
Edition 17.4.64

En

PES 2 A 60 C 110 RS 1114

EP/RSV 400-1250 A 2 B 419

supersedes

company

engine

John-Deere-Lanz  
LKA 53 - 18 P  
tractor T1C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	12	4,5 - 5,0				
	6	0,5 - 1,2				
	18	8,3 - 9,1				
200	6	0,3 - 0,9				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 46	1250	16	without auxiliary spring			ca. 20	400	6	1230	0
	1280	13,2					150	19 - 21		
	1340	6,4					400	5,7-6,3	600	0
②a	1350	3,7 - 7	with auxiliary spring				500	1,5-3,5	450	1,2-1,8
	1400	1,4 - 3,4					600	0 - 1		
	1500	0,3 - 1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1230	33,0-35,0	1260-1270							

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K20

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K20

# Test Specifications Fuel Injection Pumps and Governors

En

PES 4 A 50 D 410 RS 1127

EP/MZ 60 A 171 DL

supersedes

company

Cispalsa

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

1,7 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	1,9 - 2,3	0,3			
200	9	0,7 - 1,2				
	9	0,4 - 1,0				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Torque control travel mm	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col.	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
0,6±0,1	500-480	10	-	-	-	-	680	12,6*	200	13,2
*							820	6,6-9,0	450	12,9-13,2
							900	3,6-6,7	550	12,6-12,9

control rod travel test (cols. 4-11)  
= rotational speed 500 rev/min.  
adjust breakaway (cols. 4-5) by means of shims\*  
cam adjustment (B 8-9 - C 7-8) by means of shims\*\*

**Testoil-ISO 4113**

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			Idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm <sup>3</sup> /1000 strokes
rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat col	
1	2	3	4	5	6	7	8	9
1700	680	28,2 - 29,2	250		6,2 - 8,2 dispersion max. 1,5	0	0	6,0-6,5

\* Set breakaway between 700 mm water column by inserting washers under the governor spring.

Checking values in brackets

# Test Specifications Fuel Injection Pumps **1A** and Governors

**40**

VDI-WPP 001/4

Edition 22.1.65

En

PE 12 A 75 C 520 RS 1126

EP/RSV 300-900 A7B427

supersedes

company

KHD

engine

A 12 L 714

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,7 - 7,2				
	9	3,8 - 4,3				
	15	9,0 - 10,2				
250	9	2,5 - 3,4				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees rev/min			3 Torque control Control rod travel rev/min	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	Control rod travel mm 9			Control rod travel mm 11	
ca. 60	900 16 940 11 970 6,4		without auxiliary spring			ca. 27	300 6		880 0	
2a	960 6 - 9,6 1000 2 - 4 1100 0,3 - 1						100 19 - 21 300 5,7 - 6,3 360 2,7 - 4,2 460 0 - 1		450 1,2 - 1,8 340	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40° C (104°F) rev/min 1		6 Rotational speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
880	72,5 - 74,5	910 - 920						300	6

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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K22

K22

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 DAI 5,6 c  
Edition 3.64

En

PES 6 A 80 B 410 RS 2014 RQ 300/1425 A 405 D  
A 454 D

supersedes 10.62  
company Daimler-Benz  
engine OM 322

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,5 - 5,0	0,3			
	6	1,2 - 2,0				
	15	10,4 - 11,8				
200	6	0,4 - 1,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 5		Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
1400		14-14,8		1400		14,4		1425 1450 1500 1550 1660	14-14,4 11,6-14,4 6 - 11,5 0 - 8 0	550		0		150 200 300 400 450	7-8,1 6,2-8,1 3,8- 6 0 - 2,2 0			500 650 800 1000		15,7-16,4 15,3-15,8 14,8-15,3 14,4-14,6	

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1000	53,5 - 55,5			500 700 1400	53,0 - 57,0 53,5 - 56,5 57,5 - 61,5	100 350		mind. 7,9 2,9 - 3,4	

Checking values in brackets

Testoil-ISO 4113

K24

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①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 VOB 5,0a

2. Edition

En

PES 6 A 90 <sup>C</sup><sub>D</sub> 320 RS 2319, Y, V RQV 200-1250 AB 743 R  
300-1250

supersedes 1.75  
company Volvo - BM  
engine TD 50 B

Values apply to fuel-injection test tubing  
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

\*\*\*

Port closing at prestroke 2,0+0,1 -RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,4 - 6,8	0,4			2,5+0,1 ** (max. 2,2-2,9)
	6	0,3 - 0,9				
	9	2,6 - 3,5				
	9	0,8 - 1,7				

\*\* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

RQV 200 - 1250 AB 743  
300

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1250 1300 1350 1430 1530	15,0-18,0 11,0-15,0 6,6-12,0 0 - 7,0 0	-	-	-	ca. 12	250 350 450 550 670	6,6-8,0 4,3-6,5 1,8-3,4 0,8-2,1 0	1200	8,0

\*\*\* Port closing difference between control-rod travel 9 mm and 21 = 1,2+0,1mm camshaft.

Torque control travel a = mm

Testoil-ISO 4113

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) idle switching point		Torque-control (5) travel Control rod travel	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
2319: 900	52,0 - 54,0	1260	500	41,5-44,5	60	min.18mmRW	**	
2319Y 900	42,0 - 44,0	1260			200	5,25-11,25		
2319V 900	47,0 - 49,0	1260			300	dispersion max. 1,5		
					1350	12,25-17,25 dispersion max 3)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.77

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L3

# Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 KAE 14,3 i  
Edition 1.65

En

PE 6 B 90 E 410 S 1107, z RQ 300/650 B 501

Pumps S 1341 and S 1341 z must all be set to the delivery of the "z" version and "z" must be stamped on the nameplate.

supersedes 12.5.60  
company: Kaelble  
engine: GN 130 s  
GN.-Lok II

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,95 \pm 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12	11,1 - 13,2	0,5			
	9	6,1 - 8,0				
	18	21,2 - 23,6				
200	9	5,2 - 7,1				

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
450	15,9-16,1	450	16	650 660 680 700 730	15,8-16 12,6-16 4,8-12 0 -7,4 0	450	0	200 250 300 350	7,2-8,1 4,8-7,1 1,4-4,1 0		

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
600 600	139,0 - 142,0 127,0 - 130,0	600				

Checking values in brackets

Testoil-ISO 4113



①

# Test Specifications

## Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 4,6a

Edition 3.64

En

PES 6 A 70 B 410 RS 22

RQV 250 - 1400 A 25 D

supersedes

company:

engine

1.9.53

Daimler-Benz

OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke  $1,9 \pm 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
66±1,5	1380 1420 1460 1540 1590	14,6-16,0 11,4-14,6 7,8-11,2 0 - 4 0				10±1,5	100 250 400 600 870	7,4-9,2 5,6-7,4 2,6-4,4 1,2- 3 0	1000 900 700 500	0 0,1-0,4 0,6-0,9 0,8-1,0
						③a				

Torque control travel a = 1,0 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1000	44,5 - 46,5	1400-1420	600 1380	46,5 - 49,5 45,5 - 49,5	100+ 20	7,9-9,9	1200	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

L5

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①

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 5,1 f  
Edition 3.64

En

PES 6 A 80 B 410 RS 174  
1062

RQV 250 - 1500 A 49 D

supersedes 1.5.61  
company: Daimler-Benz  
engine: OM 321 mA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,3			
	6 15	1,2 - 2,0 10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
65±1,5	1500 1540 1620 1720 1790	15 - 18 11,4-15,4 4,4-10,6 0 - 4,4 0				10±1,5	100 250 400 600 920	6,5-8 4 - 6 2,6-3,4 1,6-3,4 0	1000 900 800 600 400	0 0,2-0,4 0,5-0,7 0,9-1,1 1,0-1,2

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	54,5-56,5	1510-1530	500 700 1500	57,0-60,0 57,0-60,0 56,0-59,0	100	mind. 7,9	1300	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications

## Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 4,6 x

Edition 3.64

En

PES 6 A 70 B 410 RS 64  
1034

RQV 250 - 1400 A 140 D

supersedes

company:

engine

15,8.58  
Daimler-Benz  
OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
65±1,5	1400	15 - 17,6				10±1,5	150	7,4- 8	1420	0
	1440	11,6-15					250	5,4-7,4	1200	0,4-0,8
	1520	4,4-9,6					400	3,6-4	800	0,8-1,0
	1600	0 - 4,2					700	1,7-3,4	500	0,8-1,0
	1660	0					950	0		
						③a				

Torque control travel a = 1,0 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1000	43,5-45,5	1400-1420	500	44,5-47,5	100	mind. 7,9			
			1400	45,5-48,5					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

L7

L7

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②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4

En

PES 6 A 70 B 410 RS 64/7 RQ 250/1125 A 301 d  
(AV 4541 d)

supersedes

company:

Daimler-Benz

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,9 + 0,1$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6	1,2 - 1,9				
	18	10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1050	14,6-15,4	1050	15	1125	14,6-15	520	0	420	0	400	15,7- 21
				1130	13,4-15			400	0 - 1,3	500	15,2-15,7
				1160	5 - 12,2			300	3 - 5,3	550	15 - 15,4
				1200	0 - 6,2			200	5,4-7,7		
				1240	0			100	6,8-8,1		

Torque-control travel  
on flyweight assembly dimension a = 0,3 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes/mm 7

Checking values in brackets

KDA 14.2.63

Testoil-ISO 4113

L8

L8

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# Test Specifications Fuel Injection Pumps and Governors

En

PES 4.150 B 110 RS 17/7 EP/M 60 A 44

supersedes

company

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,1 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 5	Fuel delivery cm <sup>3</sup> /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	2,4 - 2,7	0,3		0,8	
	9	1,4 - 1,6				
	18	4,7 - 5,2				
200	9	0,9 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	Vacuum mm w c 4	Control rod travel mm 5	Vacuum mm w c 6	Control rod travel mm 7	Vacuum mm w c 8	Control rod travel mm 9	Vacuum mm w c 10	Control rod travel mm 11
	500-420	10	-	-	-	-	+250 400 600 900	20,2-21 16-19 5,6-7,6 0-0,5		

control rod travel test (cols 4-11)  
= rotational speed 500 rev/min  
adjust breakaway (cols 4-5) by means of shims\*  
cam adjustment (B 8-9 - C 7-8) by means of shims\*\*

**Testoil-ISO 4113**

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104 F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min 1	Vacuum mm wat. col 2	cm <sup>3</sup> /1000 strokes 3	rev/min 4	Vacuum mm wat. col 5	cm <sup>3</sup> /1000 strokes 6	rev/min 7	Vacuum mm wat. col 8	mm cm <sup>3</sup> /1000 strokes 8
1300		24,5 - 25,5						

Checking values in brackets

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

En

PES 6 A 70 B 410 RS 64

EP/RSV 250-1300 A1A 364 D

supersedes

company

Daimler-Benz

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	6,5 - 7,0	0,4			
1000	6 18	1,2 - 1,9 10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 72	1300 1340 1380	16,0 11,6 5,8	without auxiliary spring			ca. 26	250	6	1280	0
②a	1360 1420 1500	6,9-10,5 1,6- 4,2 0 - 1					100 160 250 400 600	19 - 21 8,6- 21 5,7-6,3 1,8-3,8 0 - 1	1200 1100 350	0,2-0,4 0,4-0,6 0,5-0,7

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	
1280	51,0-53,0	1210-1230	900 500	53,5 - 55,5 46,5 - 48,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

L10

L 10

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# Test Specifications

## Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 DAI 4,4 a  
Edition 3.64

En

PES 3 A 85 B 410 RS 2030 EP/RSV 250-1150 A 4 A 373  
A 393

supersedes 4.62  
company Daimler-Benz  
engine MB 863

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC) RW 9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 5,9	0,4			
	6	2,4 - 3,2				
	12	8,8 - 10,0				
200	9	3,0 - 3,9				

Port closing difference between control-rod travel 9 mm and 21 = 1,2-1,3mm camshaft

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 71	1150	16	without auxiliary spring	ca. 24	250	6	1130	0		
	1190	10							450	0
	1210	6,2								
	1200	6 - 10								
	1220	3,6-6,6	with auxiliary spring							
	1260	0,6-2,9								
1320	0 - 1									
2a										

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop	6 Rotational-speed limit	3a Fuel delivery characteristics	Starting fuel delivery Idle	5	4a Idle stop
Test oil temp 40°C (104°F)	Note changed to ) rev/min				
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6
970	77,0 - 79,0	1160-1180			250
					6

Checking values in brackets

\* 1 mm less control rod travel than col 2

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L11

L11

# Test Specifications

## Fuel Injection Pumps ②

### and Governors

VDT-WPP 001/4 DAI 4,6a7

Edition 3.64

En

PES 6 A 70 B 410 RS 122 RQ 250/1450 A 200 D

supersedes

1.8.59

company:

Daimler-Benz

engine

OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		①		④		⑤		⑤		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1350	13,6-14,4	1350	14	1450 1470 1500 1560	13,4-14 8 - 14 0 - 9 0	520		200 250 300 370 420	5,6-7,6 4,4-6,6 3 - 5 0 - 2,5 0	400 600 800 1000	15,8-17,8 15,4-15,8 14,9-15,2 14,1-14,5

Torque-control travel on flyweight assembly dimension a = 0,6 mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1000	34,0 - 36,0	500		500 700 1430	34,0 - 37,0 34,5 - 37,5 34,5 - 37,5	100	mind. 7,9

Checking values in brackets

Testoil-ISO 4113



# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4

Edition 4.74

En

PES 4 A 75 C 320/3 RS 1257

EP/RSV 300-1175 A1 B11

supersedes 2.71

company 10.71

engine Hürlimann  
DS 95

PES 4 A 75 <sup>C</sup><sub>D</sub> 320/3 RS 1267

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

\*\*

Port closing at prestroke 1,9+0,1 RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,7 - 5,1	0,4			
	6 15	1,9 - 2,6 10,4 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	1175	16,0	without auxiliary spring			ca. 27	300	6,0	1150	0
	1220	11,6					100	19 - 21		
	1280	3,8					300	5,7-6,3	450	0
	1240	7,0-10,2	with auxiliary spring				360	2,8-4,4		
②a	1300	1,4- 3,8					480	0 - 1	340	1,2-1,8
	1380	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7					
1150	59,5-61,5 (58,5-62,5)	1185-1195*	500	53,0-56,0 (52,0-57,0)	100	7,9-8,9 (→ 1267)					
** Port closing difference between control-rod travel 9 mm and 21 = 1.6+0,1mm camshaft.											

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

10. Edition

En

PES 4 A 95 C 420 LS 3013

EP/RSV 300-1100 A2B538DR

supersedes (9) 31.7.73

D 420 LS3023

375-1100

company C a s e

375-1100 A2B651DR

engine A 336 BDT

375- 875 A7B696 R

Test with Case overflow valve and governor as per special setting (not for 696R!)  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	8,4 - 9,0	0,5			
	6	4,0 - 5,0				
	15	16,4 - 17,8				
200	6	1,4 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

EP/RSV .. 538DR, 651 DR

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4			Lower rated speed Control lever deflection in degrees rev/min Control rod travel mm 7			3 Torque control Control rod travel mm rev/min mm 10		11
ca.38	1200	11,2				ca.16	375	5,9	1100	0	
	1160	6,0	without auxiliary spring				150	19 - 21			
	1190	2,6					375	5,6-6,2	450	0,3-0,6	
	1140	10,6-11,4	with auxiliary spring				450	1,4-3,4			
	1180	4,4- 6,2					540	0 - 1			
2a	1260	0,3- 1,0									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40° C (104° F) rev/min 1		6 Rotational-speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4		Starting fuel delivery Idle rev/min cm <sup>3</sup> /1000 strokes 6		5 4a Idle stop rev/min Control rod travel mm 9	
1100	121,5-124,5 (120,5-125,5)	1140-1155*	750	122,0-126,0 max. 125,0 11,5-19,5 (10,5-20,5)	1200	100	13,6-14,4	375	17-23 cm <sup>3</sup> /1000

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.74

Testoil-ISO 4113

**B. Governor Settings**

EP/RSV .. 696R

-2-

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	885 900 920	12,0 9,5 5,8	without auxiliary spring			ca. 29	375		875	0
2a	900	8,5-10,0					100	19 - 21	350	0,2-0,8
	950	1,5-3,8	with auxiliary spring				375	5,5-6,1		
	1000	0,3- 1					420	2,0-3,8		
							500	0 - 1		

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
875	132,0-135,0 (131,0-136,0)	880-895		900	86,5-111,5 (85,5-112,5)	100	13,5-14,5	375	17-23
				940	11,5- 21,5 (10,5- 22,5)			cm³ / 1000	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

**B. Governor Settings**

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

As opposed to VDT-WPP 001/4 - 1st supplement - pumps 2263, 2264, 2354, 2459, 2460, 2461 and 3013 feature the following special setting:

- |  |                        |          |
|--|------------------------|----------|
| 1. Governor-spring adjustment  | corresponds to         | (1)      |
| 2. Pre-adjustment of full-load delivery and noting down of control-rod travel                            | roughly corresponds to | (2)      |
| 3. Reduce full-load control-rod travel as opposed to (2) by 1.0 mm by screwing back full-load stop screw | roughly corresponds to | (2)      |
| 4. Screw in torque-control retainer until full-load delivery is attained                                 | roughly corresponds to | (3)      |
| 5. Adjustment of breakaway   | corresponds to         | (6)      |
| 6. Testing of torque control and fuel-delivery characteristics   | roughly corresponds to | (3) (3a) |
| 7. Idle adjustment   | corresponds to         | (4)      |
| 8. Testing high idle; test starting fuel delivery and adjust with control-rod stop                       | corresponds to         | (5)      |

Please consult test instructions as regards information given in parentheses!

**Testoil-ISO 4113**

# Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4

MWM 2,1 a

En

PES 4 A 55 B 410 RS 413 EP/RSV 250-1500 2 A 45 d  
A377 d  
S 1046 400-1500 A 2 A 45 d \*\*  
395 D

supersedes 20.7.60  
company Südd. Bremsen  
engine AKD 10 V

\*\* See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC) RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	2,1 - 2,5	0,2			
	6	0,6 - 1,1				
200	9	1,7 - 2,3				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

250 - 1500

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 61	1500 16 1570 10,7 1630 5,7		without auxiliary spring			ca. 21	250 6		1480 0 1200 0,5-0,7 1000 0,8-1,0 400 1,3-1,5	
2a	1580 8,5-11,2 1600 6,6- 9,7 1700 1 - 3,6 1800 0 - 1						150 19 - 21 250 5,7-6,3 400 3,5- 5 500 0,5-3,5 700 0 - 1			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop [test oil temp 40°C (104°F)] rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	mm 9
1480	29,2-31,2	1510-1530	1200 600 400	27,7-30,7 29,2-32,2 28,2-31,2		100 mind. 5,9 (21mm RW)		n250 (→ A377d)	RW6
Port closing difference between control-rod travel 9 mm and 21 = 7-9° camshaft.									

Checking values in brackets

\* 1 mm less control rod travel than col 2

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L20

**BOSCH**

Geschäftsbereich KM Kundendienst Kfz-Ausrüstung  
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19.1.62

L20

**B. Governor Settings**

400-1500

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 61	1500	16	without auxiliary spring			ca. 24	400	6	1480	0
	1560	11,6					100	19 - 21	1200	0,6-0,8
	1620	6,8					400	5,7-6,3	1000	0,9-1,1
	1600	6,8 - 10	with auxiliary spring				600	1 - 3,2	450	1,3-1,5
	1700	1 - 3,6					750	0 - 1		
②a	1800	0 - 1								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

VDT-WPP 001/4 HAN 2,1 g  
Edition 10.64

En

PE 3 A 65 B 410 LS 536  
S 1039 Z

EP/RSV 250-1100 A1 A 118D

supersedes  
company  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,1 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,7 - 6,2				
	6	1,4 - 2,1				
	18	9,7 - 10,6				
200	6	0,8 - 1,6				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

<b>(1)</b> Upper rated speed rev/min			Intermediate rated speed			<b>(4)</b> Lower rated speed			<b>(3)</b> Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 72	1100	16	without auxiliary spring			ca. 31	250	6	1080	0
	1160	12,2					100	19 - 21	900	0,5-0,7
	1220	7	with auxiliary spring				250	5,7-6,3	700	1,0-1,2
	1200	7,2-10,2					350	4 - 5	400	1,0-1,2
	1250	3,2- 5,2					400	2,5-4,2		
	1300	0,3- 3,5					600	0 - 1		
<b>(2a)</b>	1400	0 - 1								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit		<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery Idle <b>(5)</b>		<b>(4a)</b> Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	
1080	39,0-41,0	1110-1130	900 500	41,5-44,5 41,5-44,5					

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113